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TWENTY-EIGHTH BIENNIAL REPORT

OF THE

NORTH CAROLINA
STATE BOARD OF HEALTH



JULY 1, 1938---JUNE 30, 1940

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RALEIGH

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Term expires 1943

W. T. RAINEY, M.D.

Term expires 1941

JOHN LABRUCE WARD, M.D.

Term expires 1943

Appointed by the Governor

HUBERT B. HAYWOOD, M.D.

Term expires 1941

H. LEE LARGE, M.D.

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J. N. JOHNSON, D.D.S.

Term expires 1941

H. G. BAITY, PH.D.

Term expires 1943

C. C. FORDHAM, JR., PH.G.

Term expires 1941

LETTER OF TRANSMITTAL

Raleigh, N. C., September 16, 1940.

His Excellency, CLYDE R. HOEY,
Governor of North Carolina.

MY DEAR SIR: — Under Authority of Chapter 118, Article 1, Section 7050, Consolidated Statutes of North Carolina, I have to submit to you for transmission to the General Assembly the Biennial Report of the State Board of Health for the period July 1, 1938, to June 30, 1940.

Yours sincerely,

CARL V. REYNOLDS,
Secretary and State Health Officer.

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THE CHRONOLOGICAL DEVELOPMENT OF PUBLIC HEALTH WORK IN NORTH CAROLINA

In the seventies Dr. Thomas Fanning Wood, of Wilmington, caught the vision of the possibilities of public health work to North Carolina. How fully he grasped the far-reaching consequences of his idea, how clearly he saw the ever-growing hosts of lives saved as a result of his vision and inspiration, we shall never know. We do know that the vision never left him, and that under its sway he worked, through the *Medical Journal* which he edited and through the North Carolina State Medical Society until his influence reached the people of the State in their General Assembly of 1877, with the effect that on February 12, 1877, the North Carolina State Board of Health was born. Ours was the twelfth state board of health to be established.

Without treating the development of the newly-established board with that thoroughness that could be termed history, we think it enough to set down here in chronological order the principal events in the life and growth of the North Carolina State Board of Health.

1877. Board created by the General Assembly. Consisted in the beginning of entire State Medical Society. Society acted through a committee. Annual appropriation, \$100.
1878. First educational pamphlet issued. Subject, "Timely Aid for the Drowned and Suffocated." Annual appropriation, \$100.
1879. The General Assembly reconstituted the Board of Health. Made it to consist of nine members: six appointed by the Governor, three elected by the State Medical Society. Term of office, five years. Dr. Thomas F. Wood elected first Secretary of the Board. May 21, Dr. S. S. Satchwell was first President of the Board. Other legislative provisions: (1) Chemical examination of water, and (2) organization of county boards of health, composed of all regular practicing physicians and, in addition, the mayor of the county town, the chairman of the board of county commissioners, and the county surveyor. Four educational pamphlets issued. Subjects: "Disinfection, Drainage, Drinking Water, and Disinfectants"; "Sanitary Engineering"; "Methods of Performing Post-mortem Examinations"; "Limitation and Prevention of Diphtheria." Annual appropriation, \$200.
1880. Much of this activity this year was devoted to efforts to control diphtheria. Prompt reporting of cases was urged. Water supplies and sewage disposal provoked much discussion. A survey of schoolhouses was carried out through the County Superintendents of Health. Most of the public schoolhouses were of one-teacher size, of frame and log construction, and none of them in rural districts had any type of privy.
1881. General Assembly passed a law requiring regulation of vital statistics at annual tax listing; law ineffective. Annual appropriation, \$200.

1882. Dr. Thomas F. Wood, State Health Officer, was President of the North Carolina Medical Society and the annual meeting was held in Concord. At this meeting the State Board of Health appointed a committee for each county of one physician to "canvass (the people) in the interest of prospective legislation" on public health matters. The subject of the annual essay presented by Dr. W. P. Beall of Greensboro was "Preventive Medicine." The chief items of public health interest this year was the emphasis placed on the effectiveness of smallpox vaccination and the increasing realization of polluted water as a source of typhoid fever.
1883. Dr. J. W. Jones of Wake Forest was elected to membership on the State Board of Health by the State Medical Society at its annual meeting at Tarboro. Dr. Jones became at once an active "friend and promoter of sanitary work." Due to his efforts, a meeting of all county superintendents of health was called in Raleigh early in the next session of the Legislature. One of the chief purposes of the proposed meeting was to urge the enactment of vital statistics legislation, and to procure a small appropriation for printing.
- Several epidemics of smallpox with numerous deaths were reported—one of the most severe was in Clay and Graham counties.
1884. Dr. Wood, Secretary and Treasurer of the State Board of Health, made a pessimistic report this year. He said that "during the year little more had been done than to issue pamphlets on the subject of city sanitation." Dr. Wood pointed out that it was impossible to inaugurate public health work to say nothing of carrying it on without some money at least.
- The State Medical Society adopted a resolution at its conjoint session held in Raleigh requiring the President of the Medical Society to appoint a committee "to go before the Legislature and request an adequate appropriation to be used by the Board in behalf of the high and humane objects of the Board."
1885. General Assembly made county boards of health more efficient; allowed printing privileges not to exceed \$250 annually. Annual appropriation, \$2,000.
1886. *The Health Bulletin* made its appearance in April. Pamphlet on "Care Eyes and Ears," by Dr. Richard H. Lewis, printed and distributed.
1887. Fear of yellow fever which had made its appearance late in the year through the port of Key West, Florida, where a patient with the disease had been smuggled in, was one of chief concern to the Board. Much interest and discussion in the Board membership and throughout the state this year centered about the necessity for providing some safe method of drinking water and sewage disposal.
1888. Yellow fever epidemic in Florida and refugees to Western North Carolina demonstrated value of a Board of Health to cope with situation. Annual appropriation, \$2,000.
1889. The chief item of interest and importance to the cause of public health was a state-wide "sanitary convention" held in Raleigh February 6. It was largely attended by physicians and others from many cities and towns who were much concerned about the problems of a pure

water supply and sewage disposal. The Board published an exhaustive paper by Dr. H. T. Bahnson of Salem, President of the Board, entitled: "The Public Water Supply of Towns and Cities in North Carolina."

Providing refuge for hundreds of people who had fled from their homes farther south on account of yellow fever was a grave problem.

1890. A widespread epidemic of influenza or as it was commonly called at the time "grip" or "La Grippe," spread over the state in January. The epidemic appeared first in Russia about November 1, 1889. By December 15, 1889, 200,000 cases were reported in New York alone. It struck North Carolina during the first week in January and in two weeks time it was reported to be raging in 68 counties.
1891. Influenza continued to be present in all sections of the state throughout the year. The conjoint session met in Asheville on May 27. The term of Dr. W. D. Hilliard of Asheville as a member of the Board expired this year. Dr. S. Westray Battle also of Asheville was elected to succeed Dr. Hilliard. Dr. Thomas F. Wood was reelected Secretary and Treasurer for a term of six years.
1892. Dr. Thomas F. Wood, the Secretary of the Board, died August 22. Dr. Richard H. Lewis elected Secretary to succeed Dr. Thomas F. Wood, September 7. Annual appropriation, \$2,000.
1893. Legislative provisions: (1) Laws improving the reporting of contagious diseases, (2) the protection of school children from epidemics, (3) protecting the purity of public water supplies, and (4) regulation of common carriers. Legislature provided that Governor appoint five of the nine members of the Board of Health, that the State Medical Society elect four, and that the term of office of the members of the State Board of Health be six years. The \$250 printing limit was removed. Pamphlet on quarantine and disinfection was prepared and reprinted by many of the state papers. Annual appropriation, \$2,000.
1894. A number of public health conferences were arranged and held in different towns of the state. *Bulletin* was increased from a mailing list of 800 to 1,200. Annual appropriation, \$2,000.
1895. Dr. Albert Anderson and Dr. W. T. Pate were elected bacteriologists for the Board. Annual appropriation, \$2,000.
1896. Board passed a resolution requiring chemical and bacteriological examinations of municipal water supplies. Dr. Venable, of Chapel Hill, undertook the chemical examination, and Drs. Anderson and Pate the bacteriological examination. Board also directed Mr. John C. Chase, the engineer member, to inspect all municipal water plants in the state. Annual appropriation, \$2,000.
1897. General Assembly enacted law requiring county superintendents of health to be elected by county commissioners and reduced term of office to one year. Annual appropriation, \$2,000.
1898. The address of the President of the North Carolina Medical Society this year by Dr. Francis Duffy of New Bern was devoted almost exclusively to the promotion of public health. It really marked an epoch as sounding an advanced note in the advancement of human progress.

The State Health Officer, Dr. R. H. Lewis, devoted a great deal of time and energy to try to arouse the people of the state to the necessity for vaccination against smallpox.

1899. General Assembly improved the laws protecting public water supplies. Smallpox prevailed extensively in the state. Dr. Henry F. Long, and later, on Dr. Long's resignation, Dr. Joshua Tayloe, were employed to travel over the state, consulting with and advising the local sanitary authorities as to proper means for protecting the public. Annual appropriation, \$2,000.
1900. State Board of Agriculture, on request of State Board of Health, agreed to examine samples of water from public water supplies until Board of Health could provide its own examiner. Annual appropriation, \$2,000.
1901. State Board of Embalmers, with representatives of State Board of Health, established. County health work placed in the hands of county sanitary committees composed of county commissioners and two physicians which commissioners elected to serve with them. Term of office of county superintendent of health made two years. Annual appropriation, \$2,000.
1902. This year will be long remembered for the widespread prevalence of smallpox in virulent form. It caused many deaths in different sections in the early months of the year. In one county at least fifty people died, including many well-to-do-men. Not having any system of vital statistics reports, it is impossible to even estimate the number of cases, except from physicians' voluntary reports and death notices in the newspapers.
1903. General Assembly enacted law permitting Board of Health to charge \$5 for each analysis of a public water supply, this fee to be used in paying Department of Agriculture for services of examiner. Dr. C. W. Stiles, U.S. P.H.S., before the State Medical Society at Hot Springs, called attention to prevalence of hookworm disease in the South. Dr. J. L. Nicholson and Dr. W. S. Rankin, working under State Board of Health during fall of 1903 and spring of 1904, showed great prevalence of this disease in North Carolina. Annual appropriation, \$2,000.
1904. A stenographer was employed. One hundred and twenty thousand pamphlets on tuberculosis were printed and distributed. There was a renewal and an extension of coöperative work between the Board of Health and the state press, a number of articles dealing with hygienic and sanitary subjects being furnished the papers and published in them. Annual appropriation, \$2,000.
1905. General Assembly established State Laboratory of Hygiene; imposed water tax of \$64 on all public water companies; voted \$600 annually for the support of laboratory. Small appropriation made it necessary for the Department of Agriculture to continue to assist State Board of Health. Annual appropriation, \$2,000.
1906. The North Carolina Association for the Study and Prevention of Tuberculosis was organized. Annual appropriation, \$2,000.

1907. Two thousand dollars appropriated for the State Laboratory of Hygiene. Pasteur treatment provided. State Sanatorium for treatment of tuberculosis founded; \$15,000 appropriated for permanent improvements and \$5,000 for maintenance. A law requiring the separation of tuberculosis prisoners from other prisoners was enacted. Annual appropriation, \$4,000.
1908. January 1, Dr. C. A. Shore became Director of State Laboratory of Hygiene. Annual appropriation, \$4,000.
1909. General Assembly provided for (1) whole-time State Health Officer; (2) collection of vital statistics of towns having a population of 1,000 or over; (3) that all public water companies file plans and specifications of their plants with the State Board of Health, and that the State Board of Health pass necessary rules and regulations for the care of public watersheds and plants and furnish such rules and regulations and other advice to those having charge of public water supplies; (4) that counties provide free diphtheria antitoxin for county indigents, and (5) that the maintenance appropriation for the Sanatorium be increased from \$5,000 to \$7,500, and an additional \$30,000 be granted for permanent improvements. Dr. Richard H. Lewis resigned as Secretary of the Board, and Dr. W. S. Rankin was elected as his successor, beginning his official work July 1. Annual appropriation, \$10,500.
1910. General effort to interest the people and state organizations in public health work. *Bulletin* increased from 3,500 edition to 10,500 edition. Addresses on public health work delivered to Conference of County Superintendents of Schools, State Federation of Women's Clubs, State Press Association, and Sanitary Sunday observed in April. Dr. John A. Ferrell elected, February, Assistant Secretary for Hookworm Eradication; began work under State Board of Health and Rockefeller Sanitary Commission.
1911. Legislature established county boards of health to take the place of the county sanitary committees; county board of health composed of chairman board of county commissioners; county superintendent of schools, mayor of county town, and two physicians selected by the three county officials to serve with them. Legislature also abolished quarantine for smallpox and improved the quarantine laws. One thousand dollars annually appropriated to contract with antitoxin manufacturers for state supply of high-grade diphtheria antitoxin, with result that price of antitoxin was cut to one-fourth former price, saving the citizens of the state over \$30,000 annually. *Bulletin* increased from 11,500 copies to 20,000 copies each edition; closer co-operation with press of state developed; regular weekly press articles prepared and sent to papers; increase in numbers of popular pamphlets for distribution. Hookworm work this year largely educational through the school forces and investigative through county dispensaries; thousands of children found infected and treated. Strong sentiment began to make itself felt for better health work by counties, four counties employing whole-time county health officers. Guilford County—one of the four—began its work June 1 and was

the first county in the United States to inaugurate full-time county health work. Maintenance appropriation for State Sanatorium increased to \$12,500, with \$20,000 voted for permanent improvements. Annual appropriation, \$22,500.

1912. *Bulletin* increased to 40,000 edition; number of popular pamphlets dealing with different diseases increased; press work improved; educational work of Board along all lines amplified. Secretary of Board of Health called attention of conjoint meeting of State Medical Society and State Board of Health to the relative importance of health problems and the bearing of this subject upon the proper apportionment of health funds; instrumental in passing a resolution to the effect that pellagra was an interstate problem, not a state problem, and requesting the Federal Government to deal with pellagra as a Federal problem; resolution responsible, to considerable extent, for successful effort on part of Hon. John M. Faison's securing Congressional appropriation of \$45,000 for the study of pellagra by the Federal Government. Hookworm work extended and county funds appropriated to supplement state and Rockefeller Foundation for this work. Annual appropriation, \$22,500.
1913. General Assembly passed Model Vital Statistics Law with \$10,000 appropriation for its enforcement. County superintendent of health changed to either county physician or county health officer, depending on whether part-time or full-time service. Educational efforts of Board continued and enlarged. Hookworm work along same line as year before increased in amount. Dr. John A. Ferrell resigned as Assistant Secretary to accept position with the central office of the Rockefeller Sanitary Commission in Washington, D. C. Dr. C. L. Pridgen succeeded Dr. Ferrell. The movement for improved county health work had by this time resulted in ten counties electing whole-time county health officers. The State Sanatorium for Treatment of Tuberculosis turned over by Extra Session of 1913 to the management of State Board of Health. Annual appropriation, \$40,500.
1914. Preceding work of the Board continued. Board of Health took over management of Sanatorium; started out under many difficulties on account of the institution owing many debts and the appropriation being limited. Hookworm work changed to community work directed to the installation of sanitary privies in all homes. Laboratory began to produce and distribute free anti-typhoid vaccine. Dr. C. L. Pridgen resigned as Director Hookworm Eradication, and Dr. W. P. Jacobs succeeded him. Annual appropriation, \$40,500.
1915. General Assembly makes state vital statistics law conform to national model by requiring burial permits in rural communities; enacts legislation permitting county commissioners and towns and cities to appropriate money for support of tuberculosis citizens in State Sanatorium; provides \$15,000 for purchase and building of antitoxin plant; appropriates \$60,000 for payment of Sanatorium debts and new buildings and other improvements, and \$25,000 annually for maintenance and \$10,000 for extension anti-tuberculosis work. Educational work greatly extended: *Bulletin* now 47,000; traveling

public health exhibit shown at fairs and other assemblages; press work greatly developed through employment of Miss Kate Herring, a journalist, for her whole time; stock lectures with lantern slides supplied public speakers in different parts of the state; community soil pollution work under Dr. W. P. Jacocks stops in April, and Bureau of Rural Sanitation, with Dr. G. M. Cooper at its head, succeeds, beginning work May 1. Considerable amount of work done for improvement of prison conditions. The unit system of county health work gets a good start; over 52,000 people given three complete vaccinations against typhoid fever, and medical inspection of schools put on in six counties. Annual appropriation, \$50,500.

1916. North Carolina was admitted to the Registration Area for deaths. To the educational agencies of the Board was added a self-supporting moving picture health show. Many saw this show during the year and, seeing, believed in health work as never before. *Bulletin* reached 51,000 edition. Coöperation with University in developing a plan and putting on a home post-graduate course in medicine, giving first course to 169 doctors. Put into operation an optional system of hotel inspection, with grading and publishing scores. Continued Bureau of Rural Sanitation, giving three anti-typhoid injections to 48,000, making 100,000 immunized in summers of 1915 and 1916. Did complete medical inspection of six counties and with inspection a large amount of educational work as to sanitary and hygienic living. Secured effort by Federal Children's Bureau to develop unit of child hygiene work, the Bureau using two employees to work in Cumberland and Swain counties for about eight months. Laboratory of Hygiene buys land and erects its own building. Annual appropriation, \$55,500.

1917. The General Assembly passed the following important health legislation: Chapter 263, entitled "An act to prevent and control the occurrence of certain infectious diseases in North Carolina"; Chapter 244, entitled "An act to provide for the physical examination of the school children of the state at regular intervals"; Chapter 276, entitled "An act for the coöperative and effective development of rural sanitation"; Chapter 257, entitled "An act to prevent blindness in infancy, designating certain powers and duties and otherwise providing for the enforcement of this act"; Chapter 66, entitled "An act to provide for the sanitary inspection and conduct of hotels and restaurants"; Chapter 286, entitled "An act to regulate the treatment, handling and work of prisoners."

Following the enactment of this legislation, administrative machinery, consisting of a Bureau of Epidemiology under the direction of Dr. A. McR. Crouch, a Bureau for the Medical Inspection of Schools under the direction of Dr. Geo. M. Cooper, and a Bureau for County Health Work, under the direction of Dr. B. E. Washburn, was established. Dr. Washburn, an officer of the International Health Board, was loaned to the state without cost, and the International Health Board, in addition to furnishing Dr. Washburn, appropriated \$15,000 annually for County Health Work in accordance with the provisions of Chapter 276.

The United States Public Health Service in February, 1917, detailed Dr. K. E. Miller to study county health work in different sections of the country and to establish for demonstration purposes, in Edgecombe County, department of health on an economic basis easily within the financial reach of the average county.

The State Laboratory of Hygiene moved into its own building, January 15, 1917.

The state was admitted to the registration area of the Union for births in January, 1917, the Bureau of the Census having found after investigation that our birth registration was 96 per cent complete.

The special campaign against typhoid fever begun so satisfactorily in 1915 was continued. Free vaccination of the people, however, was interfered with by the difficulty in securing medical officers to do the work, the preparedness program of the Government having caused many physicians and nurses to enter the army and navy; nevertheless, a total of 30,000 citizens of the state were vaccinated as a direct result of the Board's activities, and many thousands of others were vaccinated by the physicians of the state as a result of the educational work of the Board directed to impressing the people with the value of vaccination as a means of prevention for typhoid fever.

In December, 1917, life extension work, which consisted briefly of the free physical examination of interested citizens for the purpose of advising them as to their physical condition and needed hygienic reform and medical treatment, was begun on a county basis. The funds necessary for this work were appropriated partly by the state and partly by the counties in which the life extension work was carried out. Dr. Amzi J. Ellington, of Raleigh, who at the time was a resident physician in the New York City Hospital, was employed and placed in charge of the work. Life extension work was carried out in Vance, Alamance, Lenoir and Robeson counties, and resulted in the full physical examination of 4,000 citizens. This work was very favorably received, and the outlook for its continued development seemed excellent when, with the declaration of war and the call for physicians to enter the military service of the country, Dr. Ellington enlisted in the Medical Corps of the Army. For this reason, and for the further reason that it has been almost impossible to secure health officers during the past two years, the work was not resumed.

The educational work of the State Board of Health consisted in the issuance of eight issues of the *Monthly Health Bulletin*, each monthly edition amounting to 45,000, and a daily newspaper health article. The Bureau continued its moving picture show exhibit. Arrangements were made for the preparation of newspaper plate, which was sent to and extensively used by 202 papers having a total circulation of 303,000.

The annual appropriation for the State Board of Health was \$60,772.16. The annual appropriation for the State Laboratory of Hygiene was \$12,500, and this, in addition to \$9,087.22 in fees permitted under the laws of the state to be paid to the Laboratory for

special work, provided the Laboratory with a total annual budget of \$21,587.22.

1918. Much of the work this year was influenced by the war and had to do with preparedness. The State Health Officer visited Washington, at the request of the Council of National Defense and as chairman of a committee of State Health Officers, on a number of occasions for conferences with respect to preparedness measures, provisions for the control of venereal diseases, arrangements for coördinating the control of infectious diseases in the civilian population with their control in cantonments, and to arrange, if possible, with the Public Health Service and the Surgeon-General of the Army for preserving the personnel of state health departments during the war.

Considerable time was given to assisting Major John W. Long, Medical Aide to the Governor, in the work of organizing the Medical Advisory Boards and in interesting physicians in entering the medical service of the Army and Navy, and, later in the year, in inducing the physicians of the state to become members of the Volunteer Medical Service Corps.

Partly as a result of these activities, the Surgeon-General of the Army assigned Major Joseph J. Kinyoun to assist the State Board of Health in the control of communicable diseases, the Board being under no financial obligation for Major Kinyoun's assistance; and as a result of the successful termination of the activities of various interests looking to a more effective control of venereal diseases, the Kahn-Chamberlain bill passed Congress, and made available to the State of North Carolina, and without condition, \$23,988.61 for venereal disease work.

The Laboratory during this year began the distribution of a high grade of diphtheria antitoxin.

The Bureau of Medical Inspection of Schools, under the direction of Dr. G. M. Cooper, developed, and with a degree of success that we may say established, free dental clinics for the public schools of the state. The Bureau also developed to a successful extent an arrangement in the form of adenoid and tonsil clubs for the practical and economic treatment of public school children suffering from these defects.

The Bureau of Epidemiology employed two third-year medical students, equipped them with motorcycles, and put them into the field to investigate infringements of the quarantine law. Sufficient convictions were obtained to impress the people with the determination of the state to enforce its health laws, and a fairly satisfactory compliance with the laws regarding the reporting of communicable diseases was brought about.

The Bureau of Venereal Diseases, paid for by the Federal appropriation, was established in September under the directorship of Dr. James A. Keiger.

Mr. Warren H. Booker, for the last seven years the efficient director of the Bureau of Engineering and Education, left in September for Red Cross work in France, the work of his bureau being continued, with the exception of the engineering work, by Mr. Ronald B. Wilson,

who had been employed earlier in the year to succeed Miss Herring in assisting Mr. Booker with the journalistic work, Miss Herring having been engaged by the War Department for educational work.

Perhaps the most outstanding feature of the health work during the year 1918 was the epidemic of influenza. The epidemic began early in October and caused in October alone 6,056 deaths; in November 2,133 deaths, and in December 1,497 deaths, a total during the last three months of 9,686 deaths.

The annual appropriation for the State Board of Health for 1918 was \$73,210.38.

The annual appropriation for the State Laboratory of Hygiene was \$12,500. The Laboratory, during this year, collected \$8,532.48 in fees for special work, so that the total income of the Laboratory for this year was \$21,032.48.

1919. The General Assembly passed the following important health legislation: Chapter 71, entitled "An act to prevent the spread of disease from insanitary privies"; Chapter 192, entitled "An act to provide for the physical examination and treatment of the school children of the state at regular intervals"; Chapter 206, entitled "An act for the prevention of venereal diseases"; Chapter 213, entitled "An act to require the provision of adequate sanitary equipment for public schools"; Chapter 214, entitled "An act to obtain reports of persons infected with venereal diseases"; Chapter 215, entitled "An act to amend Chapter 671, Public-Local Laws of 1913, relating to the injunction and abatement of certain nuisances."

The Bureau of Engineering and Inspection was organized in April. The engineering work of the Board had been suspended with the resignation of Mr. Warren H. Booker in September, 1918, Mr. Booker having gone to France to engage in tuberculosis work under the direction of the Red Cross. Between September, 1918, and April, 1919, the engineering problems coming before the Board had been referred and very kindly and effectively taken care of by Col. J. L. Ludlow of Winston-Salem, the engineer member of the Board. Mr. H. E. Miller, an engineer and a graduate of the University of Michigan, was placed in charge of the new bureau, and his brother, Dr. K. E. Miller, of the United States Public Health Service, was detailed by the Service to assist him in the organization of his work. Mr. H. E. Miller and Dr. K. E. Miller spent the spring and summer and a part of the fall in studying various types of privies, in preparing plans for the construction and maintenance of privies, and in preparing the necessary notices and literature to inform the people of the objects and requirements of the new privy law.

On May 1 Dr. A. J. Warren, health officer of Rowan County, was appointed to and accepted the position of Assistant Secretary of the Board.

About the first of the year, Miss Herring returned to the educational work of the Board. After a few months she returned to the Federal Service, and Mr. R. B. Wilson, who had left the Board work upon Miss Herring's return, was again offered a place with the Board. Mr. Wilson accepted and assumed his duties on July 1.

On August 1 Dr. A. McR. Crouch, Director of the Bureau of Epidemiology, resigned to accept a position with the city of Wilmington. Dr. F. M. Register, whole-time health officer of Northampton County, succeeded Dr. Crouch as director of the bureau.

Dr. E. J. Wood resigned this year, effective at the end of his term, and Governor Bickett appointed Dr. E. J. Tucker of Roxboro for six years term—first dentist to serve on Board.

In September Dr. J. R. Gordon, Director of the Bureau of Vital Statistics since 1914, resigned on account of impaired health, and on October 1st the Bureau of Epidemiology and the Bureau of Vital Statistics were combined and placed under the direction of Dr. Register.

In September Mrs. Kate Brew Vaughan, Director of the Bureau of Infant Hygiene, resigned. The bureau was reorganized under an understanding with the American Red Cross and was enlarged to include, in addition to infant hygiene, the problem of public health nursing, the name of the bureau being changed to that of "Bureau of Public Health Nursing and Infant Hygiene." Under the agreement with the Red Cross this bureau was to have an available appropriation of \$12,000 a year, half of which was to be furnished by the American Red Cross and half by the State Board of Health. The personnel of the bureau and its plan of work, under the agreement, was made contingent upon the approval of both participating agencies, the American Red Cross and the State Board of Health. In December Miss Rose M. Ehrenfeld took charge of the new bureau and began its organization and work.

On October 1 Dr. Jas. A. Keiger, Director of the Bureau of Venereal Diseases, resigned and Dr. Millard Knowlton was appointed to succeed him.

The typhoid campaign carried on during the summer through previous years was continued in the summer of 1919, using third-year medical students, furnished either with automobile or motorcycles for getting about. Campaigns were carried out in the following counties: Bertie, Cabarrus, Chatham, Chowan, Columbus, Craven, Hertford, Iredell, Johnston, Lincoln, Onslow, Pasquotank, Perquimans, Randolph, Richmond, Rockingham, Stanly, Union, Warren, Wayne. A total of 49,076 were given complete vaccination.

The educational work of the Board consisted of the publication of 48,000 monthly edition of the *Bulletin*, and the distribution of about 350,000 pieces of public health literature.

The funds available during this fiscal year amounted to \$198,549.14, of which \$102,301.98 was from state appropriations and the remainder from outside sources.

The appropriation for the State Laboratory of Hygiene for this year was \$28,500; in addition to this, the Laboratory collected in fees for special work, for antitoxin, and in water taxes a total of \$14,344.02, making a total of \$42,844.02 available for work of Laboratory.

1920. During this year there was a Special Session of the General Assembly, lasting twenty days and held in the latter part of August. This Special

Session passed an act amending the vital statistics law, making the fees for local registrars 50 cents instead of 25 cents for each certificate properly filed with the State Board of Health.

On January 1 Dr. B. E. Washburn, who had had general direction of the coöperative county health work and who had rendered most acceptable service, was recalled by the International Health Board and detailed to take charge of their interests in Jamaica. Dr. K. E. Miller, of the United States Public Health Service, who had been detailed in January, 1917, to organize a model county health department in Edgecombe County and then, in 1919, to assist his brother, Mr. H. E. Miller, in organizing the work of the new Bureau of Engineering and Inspection, to which was assigned the duty of enforcing the state-wide privy act, succeeded Dr. Washburn as director of the Bureau of County Health Work.

In January a coöperative effort with the United States Public Health Service and the International Health Board to demonstrate the possibilities and advantages of the eradication of malaria from certain towns and cities in the eastern part of the state was begun. The terms of coöperation were that the International Health Board and the State Board of Health were to pay one-half of the expenses of the local work and the town or city in which the work was done the other half, the Public Health Service furnishing, as its part, expert supervising personnel. The towns and cities chosen for this work were Goldsboro, Farmville, and Greenville, the budget for each municipality being, respectively: Goldsboro, \$13,670.98; Farmville, \$5,000, and Greenville, \$9,000, a total investment in this work of \$27,670.98. Mr. A. W. Fuchs, Associate Sanitary Engineer, was detailed by the Service to have supervision of the work.

In February Dr. A. J. Warren, Assistant Secretary of the State Board of Health, resigned his position in order to accept the appointment of city health officer of Charlotte, N. C.

In the winter and spring of 1920 the North Carolina Landowners' Association, under the progressive leadership of Mr. W. A. McGirt, of Wilmington, undertook a very extensive educational campaign against malaria, which was carried on through the public schools of thirty-eight counties in eastern North Carolina. A series of county and state prizes for the best essay on malaria by public school children were offered as an inducement to the school children to interest and inform themselves and, indirectly, their parents with regard to the importance of this disease. To make possible this work by the school children 75,000 malaria catechisms, prepared by Dr. H. R. Carter, of the United States Public Health Service, were distributed through the public schools of the eastern part of the state to the school children. Thousands of essays were written, and it is reasonable to believe that the campaign was one of the most successful public health educational attempts yet undertaken.

In June it was found advisable to separate the Bureau of Epidemiology and the Bureau of Vital Statistics which had, on account of the scarcity of health officers, been placed under the directorship of a single bureau chief, Dr. F. M. Register. Dr. Register was appointed

Director of the Bureau of Vital Statistics and Dr. J. S. Mitchiner was appointed Director of the Bureau of Epidemiology.

In April the Interdepartmental Social Hygiene Board assigned to the State Board of Health several workers for making a study of vice conditions in North Carolina towns and cities and for taking such steps as were found expedient for decreasing prostitution. This group of workers was withdrawn in September on account of differences developing between them and Dr. Knowlton, chief of the Bureau of Venereal Diseases, with the understanding that another group of workers would be assigned to this work at a later date.

In June arrangements were made with the United States Public Health Service and the American Social Hygiene Association for the development of an elaborate educational unit on sex hygiene and venereal diseases designed to reach rural meetings through the use of picture films and a portable truck. An outfit consisting of several lectures and a moving picture truck began work in Cumberland County in August, and from its very beginning met a most cordial reception and gave every promise of developing into one of the most useful agencies for dealing with the venereal disease problem.

During the year anti-typhoid vaccination campaign was continued in Alamance, Bladen, Columbus, Duplin, Franklin, Gaston, Harnett, and Mecklenburg counties. Coöperative campaigns, in which the counties furnished the working personnel, were also carried on in Anson, Johnston and Rutherford counties. A total of 29,435 citizens have been vaccinated against the disease, and this does not include Columbus County, in which the work was just beginning when this report was completed.

The educational work of the State Board of Health during this year consisted of a 48,000 monthly edition of the State Board of Health *Bulletin* and the distribution of approximately 350,000 pieces of public health literature.

The funds available during this fiscal year amounted to \$342,284.33, of which \$176,152.61 was state appropriation and the remainder from outside sources.

The appropriation for the State Laboratory of Hygiene for this year was \$25,000; in addition to this, the Laboratory collected in fees for special work, for antitoxin and in water taxes, a total of \$13,698.89, making a total of \$38,698.89 available for the work of the Laboratory. The above amount being insufficient, the Special Session of the Legislature authorized a loan of \$15,000 to enable the work of the Laboratory to be carried on, making a total of \$53,698.89 available for the work of the Laboratory during this year.

1921. The Legislature meeting early in January of this year was asked by the Board to amend the state law restricting the salary of the executive officer of the Board to \$3,000 annually, so as to make the salary \$5,000. Such an amendment was passed. A further request from the Board was that legislation be enacted removing the inspection tax of forty cents from privies coming under the supervision of the Board of Health. Such an amendment to the State-wide Privy Law was also enacted. A bill was introduced in this session of the General Assem-

bly under the initiative of Hon. Emmet H. Bellamy requiring a physical examination of all applicants for marriage and making issuance of license contingent upon the physical qualifications of the applicant. The State Board of Health approved and supported Mr. Bellamy's bill, realizing, as did the author of the bill, that the proposed legislation was but a step in the right direction and was, therefore, rather loosely drawn and left many things to be desired. The bill finally passed in amended form as Chapter 129, Public Laws of 1921.

The Governor appointed Mr. Chas. E. Waddell, an engineer, of Asheville, to succeed Col. J. L. Ludlow as the engineer member of the Board.

Perhaps the most important change inaugurated in state health administration during this year was the adoption of a cost basis for standardizing and measuring the efficiency of public health work in those counties in which the state participated financially. This new principle is fully described in the State Board of Health *Bulletin* for January, 1922, and a further discussion of cost basis for public health work is unnecessary here except, perhaps, to say that it is apparently at least one of the first attempts to introduce the cost system of industry into government.

The Bureau of Venereal Diseases, in charge of Dr. Millard Knowlton, established as a part of the war-time activities of the Board in coöperation with the Bureau of Venereal Diseases of the Federal Government, was combined with and made a part of the work of the Bureau of Epidemiology, under the general direction of Dr. J. S. Mitchener.

Funds available for the year included: state appropriation, \$275,000; miscellaneous receipts, \$164,184.42; total, \$439,184.42.

1922. In order to bring the records of this department into harmony with those of other state departments, in accordance with the Act of the General Assembly of 1921, changing the fiscal year of the state so as to begin on July 1st each year, this report ends with June 30, 1922. It, therefore, covers a period of nineteen months; one full fiscal year from December 1, 1920, to November 30, 1921; seven months from December 1, 1921, to June 30, 1922. Effective February 1, the American Red Cross Society abrogated the agreement existing since 1919 by which it jointly financed, with the Board of Health, the Bureau of Public Health Nursing and Infant Hygiene. This bureau was reorganized April 1 as the Bureau of Maternity and Infancy, for its maintenance the state receiving \$27,259.66 annually from the United States Government in accordance with the Sheppard-Towner Act for the promotion of the welfare of mothers and infants. Dr. K. P. B. Bonner, of Morehead City, was secured as the director of the reorganized bureau, with Miss Rose M. Ehrenfeld as supervisor of nursing and Mrs. T. W. Bickett in charge of educational work.

The funds available during this period, and their distribution were seven-twelfths of the amounts set out under the tabulation for 1921.

The appropriation for the State Laboratory of Hygiene for the nineteen months between December 1, 1920, and June 30, 1922, was \$87,083.33; in addition to this, the Laboratory collected in fees for special work, for antitoxin and in water taxes, a total of \$30,872.51, making a total of \$117,955.84 available for the work of the Laboratory.

1923. The General Assembly of 1923 enacted some important and far-reaching legislation affecting public health work in North Carolina. The most important legislation enacted this year was the act providing for an independent board of directors for the State Sanatorium for Tuberculosis, removing the direction of that institution from the authority of the State Board of Health. Facilities were also provided at the State Sanatorium for the confinement, care, and treatment of tuberculosis convicts. Other legislation included the act to provide for the sanitary manufacture of bedding, the latter act to be enforced by the State Board of Health. The Bureau of Epidemiology was again combined with the Bureau of Vital Statistics.

On March 1 Dr. G. M. Cooper was made Assistant Secretary of the State Board of Health, and Dr. J. S. Mitchener was assigned to the Bureau of Medical Inspection of Schools, after the consolidation of the Epidemiology work, which he had directed, with the Bureau of Vital Statistics. Dr. K. E. Miller, of the United States Public Health Service, was recalled for duty elsewhere.

In order to experiment with the plan of District Health Work, an effort was made to place responsibility for all State Board of Health activities under the direction of district directors attached to the staff of the State Board of Health. This effort was continued throughout the year, but proved to be ineffective and unsatisfactory.

During the year Dr. F. R. Harris resigned from membership on the State Board of Health to become health officer of Vance County. The Board elected Dr. D. A. Stanton, of High Point, to fill the unexpired term of Dr. Harris.

In order to further carry on the important work of malaria control in a number of the counties of the coastal plain area of the state, which work was so effectively commenced in an educational capacity in 1920, the International Health Board was requested to participate in this work and to provide a director for that service. The International Health Board agreed, accepted the invitation and assigned Dr. H. A. Taylor, of Alabama, to head this division. Pamlico County was selected as headquarters for Dr. Taylor. The cost of this work was borne by the State Board of Health and Pamlico County contributing 40 per cent. each, and the International Health Board the remaining 20 per cent. The International Health Board, of course, paid the salary of Dr. Taylor.

In June Dr. J. S. Mitchener resigned as director of the Bureau of Medical Inspection of Schools and Dr. Roy C. Mitchell, who had been doing some special educational field work for the Board, temporarily succeeded Dr. Mitchener.

Early in 1923 Dr. W. S. Rankin, the State Health Officer, was invited by the Committee of Municipal Health Department Practice of the American Public Health Association to become field director for

the committee in making a study of municipal health practices in the United States. This was for the purpose of working out a basis or set of principles through which city health departments could be given classification or grading, and also for the purpose of assisting such departments in their organization work. The request was brought before a special meeting of the executive committee of the Board, and it directed the Secretary to take advantage of the opportunity offered. The Board granted to the Secretary one year's leave of absence, but requested him at the same time to continue in touch as executive officer of the Board with the work of the Board.

On November 1 Dr. Rankin assumed his duties and established official headquarters in New York City for the work of the committee.

The general organization of the executive staff of the Board was continued with the Assistant Secretary, Dr. G. M. Cooper, as official head of the staff. Local health work in the eastern half of the state was directed by Dr. H. A. Taylor, and that in the western part of the state by Dr. E. F. Long, who had been assistant to Dr. K. E. Miller as director of county health work. To assist Dr. Taylor in the east, Dr. George Collins, formerly health officer of Mecklenburg County, was employed, and to assist Dr. Long in the western half of the state Dr. C. N. Sisk, formerly health officer of Forsyth County, was employed.

During the year a plan for the more adequate sanitary control of public milk supplies in the state was formulated. This work was undertaken under the direction of the Bureau of Engineering and Inspection, and Mr. Malcolm Lewis was employed to organize this work. Several changes in personnel took place this year. Dr. M. L. Iseley, who had been employed in county health department work, and Dr. Roy C. Mitchell resigned. Miss Rose M. Ehrenfeld also resigned.

1924. During this year Dr. Rankin continued his work with the American Public Health Association until November 1. During this period the work of the Board was directed by Dr. G. M. Cooper, serving as Acting Secretary. On November 1 Dr. Rankin returned, and during that month, under the direction of Dr. Maxey of the United States Public Health Service, a school for health officers was conducted under the auspices of the State Board of Health for one week in Raleigh. This meeting was well attended, and every modern method which might be utilized in the work of a modern public health department was discussed throughout the week.

Dr. M. L. Townsend was placed in charge of the Division of Health Education. Dr. K. P. B. Bonner resigned as director of the Bureau of Maternity and Infancy.

1925. Dr. Rankin resigned, effective June 1, to accept the position of director of the Hospital and Orphan Division of the Duke Foundation. At a meeting of the Board of Health on May 30 Dr. G. M. Cooper was unanimously made Acting Secretary for an indefinite period of time to succeed Dr. Rankin. During the year Dr. E. F. Long resigned as director of county health work and Dr. C. N. Sisk, who had been

assistant to Dr. Long, was placed in charge of county health work, without an assistant.

1926. On June 21 Dr. Charles O'H. Laughinghouse, a member of the Board, was elected permanent Secretary and State Health Officer to fill the unexpired term of Dr. Rankin. Dr. Laughinghouse accepted and took office October 1. Dr. G. M. Cooper, who had for sixteen months administered the work of the Board as Acting State Health Officer, continued with the service and was assigned to the Bureau of Health Education, succeeding Dr. M. L. Townsend, who resigned. On August 6 Dr. Richard H. Lewis died. Dr. Lewis had served as a member of the Board since 1885, and from 1892 to 1909 he served as Secretary of the Board. Since 1909 he had been a member of the executive committee. Dr. Lewis held his membership on the Board by appointment from the Governor. To fill the term of Dr. Lewis, expiring in 1931, Governor McLean appointed Dr. John B. Wright, of Raleigh. Among other reasons assigned for this appointment, the Governor stated that it had been the rule since the Board of Health was established to have at least one of the members of the Board a resident of Raleigh.

When Dr. Laughinghouse resigned, in order to accept the election to the position of State Health Officer by his fellow members on the Board, the remaining members of the Board elected Dr. W. S. Rankin, of Charlotte, former Secretary of the Board, to succeed Dr. Laughinghouse.

1927. There were no changes in personnel or in staff organizations during the year 1927. The most important event occurring this year was the death of Dr. J. Howell Way on September 22. Dr. Way had been a member of the Board for many years and had been President of the Board for a long time. Governor McLean appointed Dr. C. C. Orr, of Asheville, to succeed Dr. Way. At the first meeting of the State Board of Health following the death of Dr. Way, Dr. A. J. Crowell, of Charlotte, was made President of the Board. In April of this year Dr. W. S. Rankin resigned as a member of the Board, and Dr. L. E. McDaniel, of Jackson, was elected by the other members of the Board to succeed Dr. Rankin.

1928. Dr. J. C. Johnson, who had been director of the Oral Hygiene Division, resigned as director of the oral hygiene work of the Board, effective December 31.

During this year a corps of nurses employed in the Maternity and Infancy Division of the Board, one-half of whose expenses were paid by the Federal Government from Sheppard-Towner funds, held midwife classes in about thirty counties of the state. The nurses gave special instruction to midwives in groups, and the county authorities enacted midwife rules and regulations for the control of their practice.

The educational work of the Board was of a high order during this year. A thirty-two page *Bulletin* was issued monthly, and a moving picture machine with several films on modern health subjects was exhibited in many sections of the state.

1929. With aid secured from the International Health Board, the Life Extension Division was added to the activities of the Board this year. Dr. Frederick R. Taylor, of High Point, was made director of this division. Dr. Taylor carried this work before the medical profession in all sections of the state.

On January 1 Dr. Ernest A. Branch accepted the appointment as director of the Division of Oral Hygiene to succeed Dr. J. C. Johnson, resigned. Dr. Branch immediately set in motion reorganization plans for the oral hygiene work to include more lectures and more educational demonstration work. Dr. Branch made contacts with several of the colleges of the state and training schools for teachers.

Expenditures for the Board work this year reached the highest peak in the history of the Board, totaling about \$486,000. There were no significant changes, other than those mentioned above, in personnel during this year.

1930. This year marked many significant changes in the affairs of the State Board of Health. Early in the year Dr. C. N. Sisk, director of county health work, resigned. Dr. D. A. Dees succeeded Dr. Sisk as director of county health work. Soon after the resignation of Dr. Sisk, Dr. F. M. Register, director of the Bureau of Vital Statistics, resigned, and the work of that bureau was assigned to Dr. G. M. Cooper, in connection with his work as director of health education. On August 26 Dr. Chas. O'H. Laughinghouse, State Health Officer, died. Soon after his death, in a meeting of the Board, Dr. H. A. Taylor was made Acting State Health Officer. On September 24, following the death of Dr. Laughinghouse, the Board elected Dr. W. P. Jacocks State Health Officer to succeed Dr. Laughinghouse. On November 20 Dr. Cyrus Thompson, for many years a member of the Board, died. On December 16 the Board met and unanimously elected Dr. James M. Parrott, of Kinston, as a member to succeed Dr. Thompson.

1931. At the beginning of this year, Doctor Jacocks having declined to accept the position of State Health Officer, to which he had been elected by the Board on September 24, 1930, a bill was introduced in the Legislature abolishing the State Board of Health as then constituted. This bill was passed and became law during the session of 1931. With the enactment of the new law the terms of the members of the old Board were automatically terminated. Under this new law governing the state health work, legislative machinery providing for the establishment of a new organization to carry on the public health work of the state was enacted. The new law differs in many respects from the old law under which the Board had operated for so long. However, the most important provision of the old law was retained; that is, the non-political character of the Board and the retention of the permanency of the policies of the Board, although shortening the terms of office and making it impossible for the Board to become a self-perpetuating machine.

The important provisions in the new law under which the Board of Health work is now operating are as follows: The Governor still retains the power to appoint five of the nine members of the Board, the maximum term of office being four years instead of six, as under the

old law. The Medical Society of the State of North Carolina still retains the power to elect four of the nine members of the Board, the same conditions as to term of office to obtain here as in those appointed by the Governor. It was recommended to the Governor, although not written into the law, and Governor Gardner accepted the suggestion, that he appoint one member from the State Dental Society and that he appoint a man recommended by that society. This is equivalent to allowing the State Dental Society to name one of the members, but still leaves the balance of power in the hands of the Governor. This seems to be a very satisfactory arrangement.

Another important change is that the Board still elects the State Health Officer, but it can only become effective upon the approval of the Governor. The term of the State Health Officer, along with members of the Board of Health, was restricted to four years.

Following the adjournment of the Legislature, the Governor appointed the following named members: Drs. J. T. Burrus, High Point; H. Lee Large, Rocky Mount; J. N. Johnson, Goldsboro, the dental member; Professor H. G. Baity, of the University of North Carolina, and Mr. J. A. Goode, a druggist of Asheville. The State Medical Society at its first meeting after the adjournment of the Legislature elected the following physicians to membership: Drs. James M. Parrott, Kinston; Carl V. Reynolds, Asheville; S. D. Craig, Winston-Salem; L. B. Evans, Windsor.

It will be noted that Dr. Parrott was the only member of the outgoing Board honored with election to membership on the new Board.

On May 28 the new Board met and organized. On that day it unanimously elected Dr. James M. Parrott State Health Officer. Dr. Parrott took the offer under consideration for a period of two weeks. On June 11 the Board met again; Dr. Parrott accepted the election and agreed to assume office on July 1. Dr. Parrott resigned his membership on the Board before being elected to the position of State Health Officer, and under the provisions of the new law the executive committee of the State Medical Society selected Dr. G. G. Dixon, of Ayden, to serve in Dr. Parrott's place until the 1932 meeting of the State Medical Society. It will be noted that this is an important variation from the provisions of the old law. Under the old law the other members of the Board held the authority to name a successor, whether a member resigned or died. Under the new law the Governor names his vacancies in his list and the executive committee of the State Medical Society is permitted to name a successor to serve only until the first meeting of the State Medical Society follows.

In the meeting of June 11 the new Board found it necessary to eliminate some members of the staff and to make some consolidations, on account of reduced appropriations for the Board work. The services of Dr. D. A. Dees and Mr. R. B. Wilson were dispensed with, effective July 1. The Board reorganized the staff and made many consolidations. The new reorganization follows:

The Board reorganized the work into divisions, making many consolidations and increasing the duties of the directors of each division. Following are the divisions organized: Administrative Officer, Dr.

James M. Parrott; Director Division of Laboratories, Dr. C. A. Shore; Director Division of Preventive Medicine, Dr. G. M. Cooper; Director Division of Oral Hygiene, Dr. Ernest A. Branch. The division of County Health Work and Epidemiology was temporarily assigned to Dr. H. A. Taylor, but on August 3 Dr. Taylor resigned and Dr. John H. Hamilton, health officer of New Hanover County, was appointed director of this division. The position of director of Division of Sanitary Engineering was filled on July 14 by electing Mr. Warren H. Booker, who had formerly headed that work, to succeed Mr. H. E. Miller.

The election of Dr. Parrott was received throughout medical and public health circles of the entire state with enthusiasm. Under his able direction the work of the Board during the last half of this year moved with a precision which was gratifying to all the friends of public health work in the state.

1932. The year 1932 was uneventful in public health work. The term of none of the members of the Board expired this year, but all members continued their service just as the Board was constituted at the close of 1931.

The International Health Board awarded a scholarship to Dr. J. C. Knox for a year's special Public Health Work at Harvard and to Dr. R. T. Stimpson for a year's special work in the School of Hygiene at Johns Hopkins.

Following the very favorable reception of Doctor Parrott's annual report at the conjoint session of the State Board of Health and the State Medical Society, which was presented at Winston-Salem in April, the work of the Board was carried on on all fronts with satisfactory results, although on account of reduced appropriations many activities carried on in previous years had to be curtailed or definitely eliminated.

The death rate in North Carolina for 1932 was 9.6 per 1,000 population. This is the lowest death rate ever before recorded in North Carolina. The trend in typhoid fever death rates has been consistently downward from 1914 to 1930. This year there were three more deaths than in 1931, there occurring a total of 158 deaths from typhoid fever. The increase in population, however, offset the slight increase in number, and the rate recorded was slightly lower than 1931. The cases and deaths from diphtheria this year were also the lowest of any previous year, although progress in the elimination of these diseases has not been so satisfactory as it should have been. Deaths from pellagra continue to show a marked decline.

This year is the third year of the so-called financial depression, and it is too early to record any opinion as to what effect unemployment and decreased income and rather widespread suffering may have on the health of the people of the state. It is not too much to say, however, that the effect will be felt more severely by the children than by any other class of the population.

The infant mortality this year was 66.4 per 1,000 live births. This is so far the best record the state has ever made. The maternal mortality remains high, and indications are that with decreased expenditures

for maternal and infant hygiene the rates, particularly for infant deaths, will rise again, pushing the state back among those having an excessive infant death rate.

Expenditures for this year for all purposes by the Board were \$315,276, of which amount \$262,438 represented appropriations. This amount was just a little more than half of the total expenditures made by the Board of Health for the fiscal year ending June 30, 1930.

1933. The events of outstanding importance to the Board of Health this year was the death of Dr. C. A. Shore, which occurred on February 10. For twenty-five years Doctor Shore had been director of the State Laboratory of Hygiene. He had built the work of the laboratory during these years up to a point where its prestige and usefulness was equal to that of any other public health laboratory in America.

Doctor Shore served longer as a member of the executive staff than any other man who has ever been connected with the State Board of Health. He held the confidence and esteem of the medical profession as well as the general public to a marked degree. He was a man of extraordinary ability, and much of the success of the public health work in North Carolina may be attributed to his fine and wholesome service.

Suitable tribute has been paid to Doctor Shore and recorded in other publications of the Board and of the State Medical Society. One event in this connection, however, should be recorded here, and that is that by legislative action all buildings of the State Laboratory of Hygiene are hereinafter to be known as the Clarence A. Shore Laboratory, in memory of his distinctive service.

A few weeks after the death of Doctor Shore, Dr. John H. Hamilton, director of County Health Work, of Vital Statistics, and of Epidemiology, was made director of the laboratory work. Doctor Hamilton, on assuming his duties as director of the Laboratory, resigned the duties of director of County Health Work and of Epidemiology, but retained, however, with the assistance of Dr. R. T. Stimpson as statistician and field director, the Bureau of Vital Statistics. Dr. D. F. Milam, a consultant assigned to the State Board of Health by the International Health Board, was made acting director of the Bureau of Epidemiology in place of Doctor Hamilton. Doctor Milam had as his assistant Dr. J. C. Knox. Dr. M. V. Ziegler, consultant assigned to the Board by the United States Public Health Service, assumed the duties of acting director of County Health Work to succeed Doctor Hamilton. During this year Mr. W. D. Riley, assigned to the work as Venereal Disease Control Officer by the United States Public Health Service, organized his work and succeeded in making an important contribution to the work of the Venereal Disease Control in North Carolina.

The following changes in personnel of the State Board of Health took place during this year: Dr. W. T. Rainey, of Fayetteville, was elected by the State Medical Society for a four-year term to succeed Dr. L. B. Evans, of Windsor, whose term expired this year. Dr. S. D. Craig was reelected for a term of four more years. The Governor reappointed Dr. J. N. Johnson, dental member of the Board, for another term,

which will expire in 1937. The Governor appointed Dr. Hubert B. Haywood, of Raleigh, for a four-year term, to take the place of Dr. J. T. Burrus, of High Point. The Governor also appointed Mr. James P. Stowe, a druggist of Charlotte, for a four-year term, expiring in 1937. Mr. Stowe succeeded Mr. J. A. Goode, a druggist of Asheville. Dr. Carl V. Reynolds succeeded Dr. Burrus as President of the Board. On July 1 Drs. Knox and Stimpson returned to the Board work and resumed their places after satisfactorily concluding their year's scholarship work at Harvard and Hopkins, respectively.

The year was not marked by any widespread outbreak of epidemic disease, and notwithstanding a continuation of the financial depression, the work of the State Board of Health held up fairly well. The appropriations being lower this year than before for many years, much of the personnel service had to be reduced. A material reduction in state aid to County Health Work caused considerable contraction of the activities of County Health Department Work, but for the most part the morale of State Board of Health employees as well as the county health employees has held up remarkably well.

The Legislature, meeting for an extended session following its opening in January, made drastic reductions in appropriations to all state health work and reduced the salaries of all state health employees. This was said to be necessary in order to balance the state budget and to maintain the state's credit.

The total expenditures for the Board of Health this year, that is, for the fiscal year ending June 30, were \$291,786. Of this amount \$225,274 was appropriated by the Legislature. It will be noted that this sum was less than half of that appropriated and spent for the fiscal year ending June 30, 1930.

1934. The event of greatest importance to the State Board of Health and to the health work throughout the state in this year was the death of Dr. James M. Parrott and the election of Dr. Carl V. Reynolds as his successor. Dr. Parrott assumed the duties of State Health Officer on July 1, 1931. He had thus served a little more than three years and four months at the time of his death. Dr. Parrott was the first State Health Officer to serve under the new, or reorganized, Board of Health. He was stricken with an attack of angina pectoris early in December, 1933. The last eleven months of his life, therefore, were ones of recurring illness and courageous fortitude in remaining at the helm of the Board of Health work. On the occasion of the first illness, with the consent of the members of the State Board of Health, he designated Dr. G. M. Cooper as Acting State Health Officer to be the responsible head of the work in such periods as he was physically unable to attend to the duties of the office. The following sketch concerning Dr. Parrott and his work, written by the Editor, was published in the *Health Bulletin*:

"The death of Dr. James M. Parrott, State Health Officer of North Carolina, occurred on Wednesday evening, November 7, 1934. Doctor Parrott had been health officer of North Carolina for a little more than three years. He was so active mentally and so near and dear to his co-workers here at the office that to me, even yet, it seems impos-

sible and unbelievable to think that he is dead. Nearly thirty years ago I 'took' the State Board examination for license to practice medicine. He was a member of that board. From then on I looked on him as one of the big men in the medical profession. He held every office within the gift of his profession and loved it and served its interests with a passionate devotion.

"He took over the direction of the work of the State Board of Health in one of the darkest hours in the history of the Board. He brought to the affairs of the Board a new kind of leadership, a fresh outlook, a new viewpoint, and a breadth of vision which served notice on the world that the Board had a resourceful and able executive in charge. Although he came to the Board work without previous experience in an administrative capacity of this type, and knowing little or nothing of the practical workings of a modern public health organization, his chief contribution, which will be duly recorded in the history of this period, to the cause of public health advancement was his stand for the professionalization of public health work.

"Before he had been here sixty days, he realized that all department divisions as well as all county health offices should be manned by physicians technically trained and experienced in public health work. It became necessary for him to oppose the ambitions of some of his lifelong friends in the medical profession, which hurt him; but it may be said to his credit that he stood four-square for competently trained men as public health officials.

"On assuming office, he realized that he had some very unpleasant duties confronting him in reorganizing the work of the Board. He soon demonstrated that he had convictions and the courage to back them up. When he laid down his armor for the great adventure, he left an organization of his own building functioning at top speed. He proved to his fellow workers here that he was tolerant to everything but laziness and lying and inefficiency. Being a man of clean personal life, and governed in all his actions by a strict sense of honor, he naturally expected such qualities in his staff and other subordinates.

"For the past year he struggled against the malady which finally ended his life, and at the same time he felt keenly his official responsibility. He knew all during that last year that, in justice to himself and his family, he should resign and be relieved of the extra tax on his failing strength. On the other hand, he felt that his work was not quite done. He saw many essential features of public health work sacrificed to a program of questionable economy. He did not question the good intentions of the Governor, the Budget Bureau, nor the Legislature, but he felt that the time had come to put an end to the further needless sacrifice of human life for the lack of intelligent preventive efforts. He had a conviction that the incoming General Assembly would see eye to eye with him. He was ready to submit a program of far-reaching importance to the people of the state. It could not be. His big brain is forever inactive. His profound knowledge of the public health needs of the people is left for his successor to acquire for himself.

"No man could build for himself a better monument than Doctor Parrott did in the record of worth-while work well done. In his death the state loses an honest public servant, and I lose a warm and understanding friend whose confidence was more precious to me than the riches of Araby."

Following Dr. Parrott's death, the State Board of Health assembled in Raleigh on November 10, 1934, and unanimously elected Dr. Carl V. Reynolds, who at that time was serving as President of the Board, to the position of State Health Officer and Secretary and Treasurer of the State Board of Health. Dr. Reynolds immediately accepted and assumed his duties at once. The following Editorial appeared in the *Health Bulletin* in January, 1935, concerning Dr. Reynolds and his work. It is herewith reproduced in order that this chronological record may be complete:

"Doctor Carl Vernon Reynolds, of Asheville, on November 10, took the oath of office and immediately assumed his duties as Acting State Health Officer, succeeding Dr. James M. Parrott, who died November 7. Doctor Reynolds was unanimously elected to the position by his fellow members on the Board.

"Doctor Reynolds is a native of Asheville. His father was a successful Asheville physician who died when Doctor Reynolds was only three years old. Doctor Reynolds obtained his literary education in the private schools of Asheville and Wofford College, Spartanburg, South Carolina. He received his medical education at the college of the City of New York, graduating in medicine there in 1895. After his graduation he took a postgraduate course in London, England. Doctor Reynolds located in Asheville for the practice of medicine, specializing in pulmonary tuberculosis. His skill in combating that disease has been widely recognized by the medical profession. An example of their confidence was his election as president of the North Carolina Medical Society, in which place he served with distinction in 1920.

"On beginning practice he at once became interested in health work. His first connection was with the city health department in 1896. Following that period, for more than twenty years he served as city health officer of Asheville, in which capacity he rendered his city and the whole state important and permanent service. Some of his contributions to public health may be cited, as follows:

"He organized the first crusade against the common housefly ever undertaken anywhere.

"He assisted in drafting the first milk ordinance for Asheville.

"He secured progressive sanitary laws.

"He put through the compulsory vaccination law requisite to school attendance.

"He secured the adoption of a bread-wrapping ordinance and one requiring the tuberculin testing of cows.

"He saw typhoid fever drop from an average of two hundred and seventy cases a year in the city of Asheville to about five while he was city health officer, and saw smallpox practically eliminated.

"We enumerate these things so that the people of the state may know they have a well-trained health officer at the head of the State Health Department—one fully worthy of confidence and support."

The general routine work of the State Board of Health during this year was satisfactory and successful in every way. Dr. D. F. Milam, who had been loaned to the State Board of Health by the International Health Board and who had been acting as State Epidemiologist, was transferred to other fields and on the first of July Dr. J. C. Knox, who had been Assistant in the Division of Epidemiology, became State Epidemiologist.

Dr. M. V. Ziegler, of the United States Public Health Service, who who had also been loaned by that organization as a consultant in the Division of County Health work and who had been Acting Director of that Division, was transferred back to Washington about the first of September. Dr. R. E. Fox, who had completed a postgraduate course in the Public Health School of Harvard University, was made Director of the Division of County Health Work.

Dr. R. T. Stimpson, who had also successfully completed a postgraduate course in the School of Public Health of Johns Hopkins University, and who had been acting as Assistant in the Department of Vital Statistics, was made Director of that Division.

On November 10, at the time Dr. Reynolds was elected State Health Officer, Dr. G. M. Cooper was elected Assistant State Health Officer. Dr. Reynolds, of course, had to resign from his place on the Board in order to accept the office of State Health Officer. To succeed him as President, Dr. S. D. Craig of Winston-Salem was elected to that position. Dr. J. N. Johnson of Goldsboro, dental member of the Board of Health, was elected to the place of Vice President of the Board. The law provides that in case of a vacancy occurring on the State Board of Health among the membership elected by the State Medical Society, that the Executive Committee of the Medical Society of the State of North Carolina shall have the authority to appoint a successor to serve until the next ensuing meeting of the State Society. In this case, the vacancy coming so close to the annual meeting of the State Society and the Board of Health on the following May 1 and there being no regularly scheduled meeting of the Executive Committee of the State Medical Society, it was decided to defer the election of a successor to Dr. Reynolds to the meeting of the Society the following May 1.

1935. Dr. Carl V. Reynolds served as Acting State Health Officer, the Governor having deferred the approval of his election the previous November 10, 1934, but at the annual meeting of the State Board of Health, which was held in Pinehurst May 7, 1935, Dr. Reynolds was unanimously elected State Health Officer. His election was for a full four-year term to begin on the first of July following. The Governor immediately approved the election of Dr. Reynolds to be State Health Officer for the full term as stated.

At the meeting of the conjoint session at Pinehurst on Wednesday, May 8, Dr. Grady G. Dixon was reelected to succeed himself to membership on the State Board of Health for a term of four years.

Dr. J. LaBruce Ward of Asheville was elected for the four-year term to succeed Dr. Carl V. Reynolds, resigned.

In this year an important development in public health work was the experimental course put on in the school year of 1934-1935 at the University of North Carolina, under the auspices of the Public Health Administration, of a course of instruction designed to prepare physicians for positions as health officers. The courses in this school met with such success, plans were perfected to enlarge the scope of this new school as a part of the Medical School at the University. A fuller description of the inauguration of this school will be found under the records for 1936.

During this year following the enactment of the National Social Security law, plans were worked out for an expansion of the work of all the divisions of the State Board of Health, through financial aid coming through the Children's Bureau and the United States Public Health Service at Washington. It was a year which noted much activity in public health work all throughout the state, and the perfection of plans, state and local, for extending health department activities.

A Division of Industrial Hygiene was tentatively established in September of this year. The organization of this division resulted from an amendment to the Compensation Laws of the state by the 1935 General Assembly. This legislation made disablement or death by occupational disease interpretable as an injury by accident and thus compensable. For the execution of this legislation a sum of \$10,000 was appropriated by the Legislature. The Industrial Commission appreciating that a problem of preventive medicine was involved, engaged in a series of conferences with the State Board of Health and Officers of the United States Public Health Service. The discussions culminated in the \$10,000 appropriated for the administration of the occupational disease legislation being placed at the disposal of the State Health Officer. With this money, an Industrial Hygiene program was inaugurated as an activity of the State Board of Health. This arrangement was made with the understanding that the work would be subsidized by the United States Public Health Service when Social Security funds should become available. To begin the work of this division and to prepare the program for enlargement to its full scope, Dr. H. F. Easom of the State Sanatorium for Tuberculosis Medical Staff was selected as the Director of the division. Mr. M. F. Trice, formerly of the Division of Sanitary Engineering of the State Board of Health, was made Engineer of this new division.

1936. What may be termed the outstanding event of importance for the first half of this calendar year covered in the period of this report may be said to be the definite establishment of the new public health department at the University of North Carolina and the selection of Dr. Milton J. Rosenau as its director. This new department, of course, is an integral part of the School of Medicine of the University of North Carolina. The March issue of the *Health Bulletin* published the following descriptive news item of the inauguration of this department:

"The most important development in public health circles in many years for this section of the South is the establishment at Chapel Hill of a department of public health in connection with the School of Medicine, and the selection of Dr. Milton J. Rosenau as its director. This development has been made possible by the coördination of the staffs of the faculties of the North Carolina State Board of Health and the schools of medicine and engineering of the University of North Carolina.

"The new department, while an integral part of the University School of Medicine with Dr. C. S. Mangum, Dean, will be under the personal direction of Dr. Rosenau. Dr. Rosenau is generally regarded as America's foremost authority on public health. His books on preventive medicine are used everywhere as standard textbooks in all schools of public health. Until his retirement recently from that faculty he had been head of the famous Harvard School of Public Health for many years.

"For a long time the officials of the State Board of Health have worked hard to secure the establishment of such a school. The necessity for it has been apparent to all responsible health workers. The chief credit for success in launching the enterprise should go to Dr. Charles S. Mangum, Dean of the University Medical School, and to Dr. Carl V. Reynolds, State Health Officer. Both of these officials have worked hard and coöperated with each other in overcoming all difficulties in the way of the establishment of the new department.

"In the opinion of Drs. Mangum and Reynolds the development was in part made possible by the success of the course put on in the school year of 1934 and 1935 at the University under the auspices of the School of Public Administration. The first course put on with the teaching aid of the Schools of Medicine and Engineering of the University and members of the staff of the State Board of Health comprised a course of instruction for physicians in public health administration and extended over a period of twelve weeks. The work was so excellently done that they received recognition from the United States Public Health Service which assigned several of its applicants for postgraduate work to take the second course.

"We hope and believe that this enterprise under Dr. Rosenau's direction will expand into one of the most important departments of public health education in the entire country. The need for special training for physicians who want to enter public health work is great. Efficient public health departments, National, State and local in modern conditions of living are an absolute necessity. There are large numbers of young physicians who with proper postgraduate training could make excellent health officers.

"The success of the new department at Chapel Hill will go a long way toward establishing an efficient system of public health work on a sound basis throughout the entire southeastern section of the country."

On February 1 of this year, funds from the Social Security Act became available to the State Board of Health through the Public

Health Service and the Children's Bureau at Washington. In addition to adding a division of field training of public health nursing in connection with the new department of public health at the State University, a department of Public Health Dentistry was also established in connection with the Public Health School at Chapel Hill. This is said to be the first school of like character in the country. The County Health Department was enabled through the Social Security subsidy from Washington to aid all the whole time county health departments in an expansion of their work. The Division of Preventive Medicine employed Mrs. J. Henry Highsmith to begin work on February 20 as an Assistant in the field of health education. The work of this division, of course, took on enlarged activities. Plans were immediately set in motion to establish special county nurses in counties having no whole time health organization as special demonstration service for such counties. Plans were also launched to establish Maternity and Infancy Centers in many sections of the state as Demonstration Centers, looking toward an eventual lowering of the infant and maternal death rates in this state.

A sum of \$17,500 of Social Security money was appropriated by the United States Public Health Service for the Division of Industrial Hygiene. Dr. M. T. Plyler was employed as an Assistant Medical Director in that division and Mr. C. R. Matheson as a Medical Technician. Both of these men had been employed on the staff of the North Carolina Tuberculosis Sanatorium. Up to the first of July more than 150 plants involving siliceous dust hazards had been surveyed. The entire asbestos textile industry in the state involving five plants had been studied, in cooperation with the United States Public Health Service, a granite cutting establishment investigation made, and a foundry study inaugurated. There were 525 asbestos textile workers and 46 granite cutters examined during the investigatory work. In addition, preemployment examinations have been made of approximately 400 workers. All persons examined have X-ray films made of their chests. During this work nearly 300 atmospheric dust samples were analyzed. During the period, the physician and the engineer attended a four weeks' special course on Industrial Hygiene given by the Public Health Service in Washington. The division has installed a complete office equipment, as well as portable equipment necessary for successful execution of this important work. The new division is housed in the basement of the State Board of Health Building.

On April 1 of this year, the State Board of Health established a service for crippled children. This followed the approval in late March of the North Carolina Plan for Crippled Children, prepared by the State Board of Health and submitted to the United States Children's Bureau. This plan was a prerequisite of the Children's Bureau toward participation by the state in the distribution of Social Security appropriations for this purpose. Dr. G. M. Cooper of the Division of Preventive Medicine was designated as Medical Director of this service, and Mr. J. T. Barnes was employed by the State Board as State Supervisor in charge of administrative duties of this service. An advisory committee representative of the Medical, Health, Welfare,

and lay interest of the state in the problem of the crippled child was formulated to advise in the execution of this program. Prior to June 30, public clinics were arranged in various centers of the state under the direction of the State Board of Health. Coöperation had been arranged with the North Carolina Orthopedic Hospital and was being carried out satisfactorily.

Under the provision of the Children's Bureau regulations, an advisory committee was secured by the Director of the Division of Preventive Medicine for the purpose of advising from time to time on the general program of maternal and child health service work. This committee held its first meeting on March 27 at the State Board of Health in Raleigh. Representatives from the following organizations were present: State Medical Society, State Dental Society, State Public Health Officers Association, State Nurses Association, State Federation of Women's Clubs, State Parent-Teacher Association, State Welfare Department, Division of Pediatrics and Obstetrics of the State Medical Society. On or before June 30, the enlarged program of all the divisions of the State Board of Health was well underway.

1937. There was no event of outstanding importance occurring in the year 1937. Few changes in the staff or the sub-staff of the State Board of Health have occurred. Following the expansion of service throughout the year 1936 with the aid of Social Security funds coming through the United States Children's Bureau and the United States Public Health Service at Washington, a tremendous amount of work was done during the entire year 1937 in expanding the work of the health department throughout the state, an increased number of nurses were employed, additional county health departments were established and more intensive efforts were made along all lines than in any previous year. The new School of Public Health Administration at the University of North Carolina under the direction of Dr. Milton J. Rosenau, aided materially by Dr. Carl V. Reynolds, State Health Officer, and the faculty of the Medical School of the State University, made substantial and satisfactory progress. An increasing number of sanitary engineers, sanitary inspectors, and health officers from this state and other states in the southeastern regional territory were trained at Chapel Hill.

An Advisory Committee of leaders in different organizations in North Carolina, including such organizations as the State Medical and Dental Societies, Public Health Association, Parent-Teacher organizations, Women's Clubs, and the State Nurses Association, together with some independent members of the medical profession in the field of pediatrics and obstetrics and orthopedic surgery, was organized and held its first satisfactory meeting during this year.

Dr. T. C. Worth joined the staff of the Division of Preventive Medicine on September 21, 1936, and served until April 15, 1937, in the capacity of assistant to Dr. Cooper. Dr. Worth aided materially in assisting in the organization of Maternity and Infancy Centers in some forty counties of the state and contributed a great deal toward strengthening the department work. Upon Dr. Worth's departure on April 15 to continue his postgraduate education in Boston, Dr. Roy

Norton, who had been with the Division of County Health Work for about a year, and who was formerly health officer of Rocky Mount, succeeded Dr. Worth. Miss Mabel Patton, a qualified nurse, joined the staff of the Division of Preventive Medicine as a consultant nurse representing the Children's Bureau. Dr. W. J. Hughes, a colored physician whose services for work in the health education field in the Department of County Health Work was made possible through contribution by the Rosenwald Fund and who joined the staff on January 1, 1936, was able to achieve substantial progress in his work with the colored population of the state. This was the first time a colored physician had been admitted to membership on the sub-staff of the State Board of Health, and the results of work in 1936 and 1937 have fully justified his employment. Dr. R. L. Robinson joined the sub-staff of the Division of Industrial Hygiene on April 1, 1937, to succeed Dr. M. T. Plyler of that Division. Mr. W. H. Richardson, an experienced newspaperman who at one time was Secretary to Governor Morrison for his four years in the Governor's office, joined the Administrative Staff in the department exclusively conducted by the State Health Officer. Mr. Richardson has been a valuable addition to the staff and he has succeeded remarkably well in interpreting technical problems to the lay readers in hundreds of articles in the daily and weekly press of the state. Dr. G. M. Leiby, who had been Assistant District Health Officer in the Haywood-Jackson-Swain District with headquarters at Bryson City, joined the sub-staff of the Department of Epidemiology in the fall of 1936 and after some field experience was sent to the Hopkins School of Public Health for a year's special studies in syphilology. Dr. F. S. Fellows of the United States Public Health Service was loaned to the State Board of Health as a consultant in the Department of Epidemiology in the field of venereal disease control. Miss Margaret Thompson, who holds a master's degree in home economics and nutrition work from the University of Iowa, joined the sub-staff of the Division of Preventive Medicine in October, 1937. On March 15, 1937, Miss Frances R. Pratt, a specially trained nurse under the auspices of the State Maternal Health League, joined the sub-staff of the Division of Preventive Medicine. Miss Pratt's work was financed by an individual contribution from an outside agency. Her work has been to organize through the medical profession and the local health officers on a voluntary basis a system of contraceptive control work when based on medical needs. Her work has been very successful and it has been a welcome and needed addition to the staff work.

On December 16, 1937, following Legislative Provision in the 1937 session of the Legislature, \$160,000 in bonds were sold for the purpose of building a new plant for the State Laboratory on the grounds adjacent to the present State Board of Health building on Caswell Square, Raleigh. A PWA grant of about \$130,000 additional was received and work on the buildings was expected to be completed within the year 1938. A farm of 280 acres on the Raleigh-Cary paved highway was purchased and provision made for farm buildings to care for the animals used in the production of vaccines and serums.

On December 17, a conference of Public Health Officers was called at Raleigh for the purpose of discussing and making decisions concerning various field work, jointly affecting the state and local health departments. This conference was so successful that it was voted to make it an annual affair.

During the year a central general filing system was established and put into effect under the direct supervision of the State Health Officer and the Administrative Division of the Board of Health. This is proving to be a very satisfactory and progressive step.

Malaria was made a reportable disease and a malaria inspection and control unit was established in the Department of Epidemiology July 1, 1937. Effective also in 1937 was the new plan of the Division of Vital Statistics with reference to the notification of birth registration certificates to parents. Instead of waiting for a parent to write to the department to inquire if the birth has been reported and to send 50c for certificate, the plan was adopted of sending to each parent whose baby's birth was reported properly a small neat certificate of the baby's birth. This was through an arrangement with the Bureau of the Census of the United States Government. Franking privileges are allowed in this work. It simply informs parents that their babies' births have been properly recorded and the idea is through this method to reach many of those parents whose babies' birth have never been reported and get them to send in the reports.

There were no changes in the membership of the State Board of Health this year. All members whose term expired were reelected by the State Medical Society or re-appointed by the Governor, for additional four-year terms.

The total expenditures for the State Board of Health during the fiscal year ending June 30, 1937, were \$881,484.01. Of this amount \$287,747.04 was appropriated by the Legislature, \$191,943.85 was by the United States Children's Bureau, \$312,210.42 by the United States Public Health Service, and finally \$89,582.70 from fees received by the Laboratory in water taxes, etc., and other miscellaneous items.

1938. During 1938, the extension and consolidation of health work in all departments of the State Board of Health was further accomplished. This year two outstanding events may be recorded. First, the Zachary Smith Reynolds Foundation decided to donate its income from a fund of about seven million dollars to the State Board of Health to aid in a long time program of syphilis control. The initial donation from this fund by the officials of the foundation to Dr. Reynolds was a check of \$100,000. This philanthropy will bring to realization one of the finest dreams of Dr. Carl V. Reynolds, State Health Officer. It promises to enable the State Board of Health to accomplish in the near future some of the objectives that have sometimes seemed to be long years off. A long time before the Government began to realize its responsibility in the prevention of disease and the preservation of the health of its citizens as a means of bringing about better social and economic conditions and the promotion of human happiness, philanthropists such as Rockefeller led the way. This gift of the Reynolds Foundation, however, affords the practical means of enabling

the State Board of Health to organize in collaboration with the various city and county health departments of the state an effective system through which the venereal diseases may be eventually controlled in this state.

The other event in the same connection was the passage by the United States Congress early in 1938 of a bill known as the La-Follette-Bulwinkle Bill, sponsored and carried through the lower House of the United States Congress by Representative A. L. Bulwinkle of Gastonia who has long represented his district in the lower House of Congress. Through the provision of this bill the state was able to receive during the year about \$80,000 additional funds for work in syphilis control. The proceeds of these funds enable the State Board of Health to attack the ravages of syphilis even in the prenatal stages by treating syphilitic mothers early enough in pregnancy to prevent the birth of hopelessly syphilitic babies. It is probably a fact that the benefaction of the Smith Reynolds Foundation is the largest single gift for this particular purpose that has ever been made by any public or private organization in this country. The cause is not only a worthy but a pressing one. It takes money to control and eliminate such diseases as yellow fever, typhoid and syphilis.

The School of Public Health Administration of the State University at Chapel Hill has made such material progress that it became necessary on the first of September this year to employ an additional full-time professor in that department. Dr. Roy Norton, who for the preceding fifteen months had been an assistant in the Division of Preventive Medicine where he has done excellent work, was persuaded to accept the professorship. The State Board of Health reluctantly agreed to Dr. Norton's transfer in view of the fact that the School of Public Health Administration is of such far-reaching importance that it should have the services of the very best available talent in the medical profession of North Carolina. Dr. Norton is admirably equipped for this important work. There are now five full-time professors in this division of the University.

Under the persistent work of Dr. Reynolds a stationary exhibit has been erected in the large halls of the central building of the State Board of Health, at Raleigh, an exhibit which is an education in itself. It demonstrates the work of all the departments. Some of the state's foremost artists were called into the work and the officials of the National Youth Administration provided a great deal of the actual work at little cost to the State Board of Health. It would pay any citizen of North Carolina who is interested in the state's progress to visit this exhibit sometime during the year.

With the exception of the loss of Dr. Norton, there have been few staff changes of importance. Dr. R. L. Robinson who came with the Industrial Hygiene Division as a field worker in April, resigned and returned to his home to engage in private practice on the first of August. Mr. C. D. King, Jr., an Industrial Hygiene man, came with the Board in the Industrial Hygiene Division on June 15 as an assistant to Mr. M. F. Trice. Dr. G. M. Leiby returned at the completion of his course in Johns Hopkins University and assumed his duties as field

director of the syphilis control program, Dr. Fellows still remains with the Board and continues to render valuable assistance.

The officials and employees of the Department of Preventive Medicine were saddened this year on account of the death of two veteran nurses. Miss Katharine Livingston died on May 26 and Mrs. Margaret Sloan died on July 12. Both of these nurses had rendered valuable service in this Division for many years.

There were no expiration of terms of service of the membership of the State Board of Health this year, therefore no changes in personnel occurred.

In March, 1938, the Board received a report from a committee previously appointed to study pneumonia. The committee headed by Dr. H. B. Haywood of Raleigh as chairman, Dr. W. T. Rainey and G. G. Dixon from the Board, with Doctors Fred Hanes, C. T. Smith as consultants, and Dr. C. V. Reynolds ex-officio, made a full report. Arrangements were made through Dr. Hanes of the Duke Medical faculty for a special course to train local technicians which was largely attended.

An important piece of field work which met with widespread appreciation throughout the State this year was a series of 34 health institutes for teachers and principals of schools in as many places representing the State. Eight thousand teachers and principals attended these Institutes which were of a practical character. The Institutes were conducted under the joint auspices of the State Board of Health, State Department of Public Instruction and the Extension Service of the North Carolina State College. The officials who executed this piece of work were Dr. Roy Norton and Mrs. H. P. Guffy, nurse, of the State Board of Health, Miss Mary Thomas, nutrition specialist of the State College Extension Service, Mr. H. A. Perry and Mr. Charles E. Spencer of the State Department of Public Instruction. This work was under the general supervision of Doctors Reynolds and Cooper of the State Board of Health, and it was carried out under the health education division of the Board, and Dr. J. Henry Highsmith of the State Department of Public Instruction.

The total expenditures for the State Board of Health for the fiscal year ending June 30, 1938, were \$1,041,895.98. Of this amount \$353,953.55 was appropriated by the Legislature, \$226,297.57 by the United States Children's Bureau, \$337,914.39 by the United States Public Health Service, and \$123,730.47 from fees received by the Laboratory in water taxes, etc., and other miscellaneous items.

Dr. Roy Norton, who for nearly two years had been assistant director in the Division of Preventive Medicine, resigned to accept the position of Professor of Public Health Administration in the School of Public Health in the University of North Carolina. Dr. Norton's resignation was effective September 1. A successor to Dr. Norton was not appointed during the remainder of the year.

Beginning with July 1 of this year, the following counties set up whole time health department organizations: Alamance, Alleghany, Ashe, Davie, Polk and Union. On September 1, Catawba, and Septem-

ber 16, Cleveland. On November 1, Currituck became a member of the district health department with Dare and other counties.

1939. In the Division of Sanitary Engineering, John D. Faulkner returned to the department to resume his work after taking a year of public health engineering training at the University of Michigan.

Mr. James P. Stowe of Charlotte, for many years a member of the State Board of Health, died on February 12. The Governor later appointed Mr. C. C. Fordham, Jr., a Greensboro druggist who promptly qualified as a member of the Board. During the year there were no other changes in the personnel of the Board. All members whose term expired were either reelected by the State Medical Society or reappointed by the Governor.

On August 7, Dr. John S. Anderson was appointed as a member of the staff as consultant in public health administration in the Division of County Health Work. Dr. Anderson had previously served as county health officer in Craven and Cabarrus counties.

On December 31, Miss Josephine Daniel resigned as consultant in public health nursing in the Division of County Health Work and accepted an appointment as director of public health nursing with the Oklahoma State Department of Health.

On December 15, Dr. George M. Leiby, venereal disease consultant, resigned his position with the Division of Epidemiology to accept the position of director of venereal disease control in the City of Washington, D. C.

On June 13, Dr. H. F. Easom resigned as director of the Division of Industrial Hygiene to return to the North Carolina Sanatorium as clinic physician. He was succeeded, effective October 15, by Dr. T. F. Vestal, a native of Randolph County, formerly a member of the Sanatorium clinical staff.

During the year, construction work was started on the new central Laboratory on Caswell Square adjoining the administrative building of the State Board of Health. Also, construction work was begun on the buildings on the State Laboratory farm between Raleigh and Cary.

In the Division of Preventive Medicine, Mrs. J. Henry Highsmith resigned her position as health educator, effective October 1. Mrs. Highsmith's resignation was very reluctantly accepted. Off and on Mrs. Highsmith had been connected with the State Board of Health for many years. She has rendered invaluable service in the health education work of the Board.

In the early months of the calendar year of 1939, plans were matured after two or three years' efforts, attended by frequent conferences of all concerned, by the State Health Officer and the State Superintendent of Public Instruction, for the establishment of a service through which the facilities of the State Department of Education and the State Board of Health for the execution of a unified health service in the public schools of the State might be further integrated. Inauguration of this plan was made possible by a supplementary grant of \$50,000 by the Rockefeller Foundation and the General Education Board to be spent over a five year period, commencing July 1, 1939. The official designation of this organization is

the North Carolina School Health Coördinating Service. The organization as a whole consists of an Advisory Committee and a full-time operating staff. The advisory Committee consists of five members: namely, Dr. J. Henry Highsmith, Dr. G. M. Cooper, Dr. C. F. Strosnider, Dr. R. J. Slay, and Dr. Oliver E. Cornwell. The operating staff consists of the following seven members: Dr. Walter Wilkins, Coördinator; Miss French Boyd, nutritionist; Mr. Charles E. Spencer, physical education; Miss Olive Brown, physical education; Miss MacVeigh Hutchison, nurse; Dr. Walter Hughes, Negro physician; Mrs. Irma N. Henry, Negro health educator. In addition to these regular staff members several nurses from the Division of Preventive Medicine have been assigned to work with the organization for varying periods of time.

Dr. John F. Kendrick was lent to the state by the Rockefeller Foundation to serve temporarily as administrative adviser to this school health coördinating unit. Preliminary plans involving the selection of trained personnel and numerous other organization preparations were undertaken during the months of July and August, 1939, and initial field operations commenced in Stanly County in September. In addition to Stanly, coöperative work was undertaken in Person, Orange, Chatham and Wayne counties during the year.

This was the first full fiscal year in which the sum of \$100,000 donated by the Zachary Smith Reynolds Foundation to aid the Board of Health in its syphilis control work was available. This initial donation of \$100,000 in cash to the State Health Officer to be used without strings attached, represents one of the largest gifts ever received by the Board of Health. It has enabled the State Board of Health to put into effect many necessary requirements in the State-wide work of control of the spread of syphilis. This money has been used for the specific purpose for which it was allotted. It has been used to employ additional men and women who are experts in their field and for the training of other nurses and physicians to become experts in the work necessary to deal with this enormous problem. This trust fund has enabled the Board to extend its activities in almost every direction and to keep up the official work in such a manner as to make sure a long time successful program which will be necessary to reduce the prevalence of syphilis in this State to a minimum.

The total expenditures for the State Board of Health for the fiscal year ending June 30, 1939, were \$1,215,056.80. Of this amount \$364,506.25 was appropriated by the Legislature, \$232,993.80 by the United States Children's Bureau, \$311,859.00 general and \$51,829.11 venereal disease by the United States Public Health Service, \$130,290.49 by the Zachary Smith Reynolds Foundation, and \$123,578.15 from fees received by the Laboratory in water taxes, etc., and other miscellaneous items.

In this year no changes in the personnel of the State Board of Health occurred. Every member continues to serve to the full extent of his ability, giving unstintedly of his time and efforts to the constructive work of the State Board of Health.

1940. The most important item in the field of public health in this State in 1940 was the completion and dedication of the central building known as the Clarence A. Shore Laboratory of Hygiene. As stated before in this chronology, this new plant costing about \$311,000 was made possible by the selling of revenue bonds and the allocation of a PWA grant and in the acquisition of funds from various sources. The total outlay of \$311,000 represents the cost of the central plant on Caswell Square, completed and equipped, and the cost of the buildings on the Laboratory farm located six miles west of Raleigh. The Shore Memorial Building was dedicated with appropriate ceremonies on February 21, 1940. There were addresses by Governor Clyde R. Hoey, Dr. S. D. Craig, President of the State Board of Health, Dr. Carl V. Reynolds, State Health Officer, Mr. J. W. Kellog, assistant director of the State Laboratory of Hygiene, Dr. George M. Cooper, Assistant State Health Officer, and Dr. John A. Ferrell, Associate Director of the International Health Division of the Rockefeller Foundation. Dr. John H. Hamilton, Director of the Laboratory, presided over the exercises. Greetings from neighboring and friendly organizations and institutions were brought by Dr. M. J. Rosenau, Division of Public Health of the University of North Carolina, Dr. W. C. Davison, Dean of the Medical School of Duke University, Dr. W. deB. MacNider, Dean of the Medical School of the University of North Carolina, Dr. E. S. King, Professor of Preventive Medicine of Wake Forest College, Dr. Hubert B. Haywood, President-elect of the Medical Society of North Carolina, Mr. E. C. Derby, Resident Engineering Inspector of the Public Works Administration, Dr. M. V. Zeigler, Senior Surgeon of the United States Public Health Service, Washington, and Dr. John M. Saunders, Regional Medical Consultant of the Children's Bureau, Washington. The entire issue of the April, 1940 number of the *Health Bulletin* was devoted to the description of the dedication of the Shore Memorial Building. The issue was increased from the normal sixteen pages to a thirty-two page volume.

The central Laboratory building consists of four stories and is modern in every detail. The State Laboratory of Hygiene farm consists of approximately 280 acres of which 100 acres is under cultivation, the balance in woodland. The farm has a frontage of fifteen hundred and fifty feet on the great United States national highway number one. Both the Seaboard and Southern railways also front it. The buildings on the farm consist of the farm laboratory building, horses and sheep barns and buildings for the production of smallpox vaccine and other biologic products, as well as the buildings for the housing of small animals needed in this work.

On April 1, John D. Faulkner was transferred from the Division of Sanitary Engineering to the Division of Epidemiology to have charge of rodent control work.

John Andrews who had effectively headed the milk sanitation program in the Division of Sanitary Engineering resigned to accept an important position with the United States Public Health Service in Washington. R. F. Hill, Jr., finished his year of specialized training in sanitary and public health engineering at the University of North

Carolina and returned to his duties with the Sanitary Engineering Division.

Effective work has been carried on with the aid of the WPA and United States Public Health Service in the malaria control drainage and community sanitation. Milk sanitation was advanced with a marked increase in the number of pasteurization plants. With the assistance of the aforementioned organizations and the PWA, the installation of new public water systems was brought up to a total of 52 installed during a four-year period ending June 30, 1940. Improvements, additions and extensions were made to a great many of the water and sewerage systems of the state.

In the Division of Vital Statistics, there was closer coöperation with the local health departments in an effort to be of mutual assistance in registration. Social Security benefits requiring proof of number and age of dependents and necessitating the presentation of the birth and death certificates has increased the number of verifications and copies of the certificates issued by the division. There were no material changes in the division during the first half of 1940.

On March 1, 1940, Miss Amy L. Fisher succeeded to the vacancy left by Miss Daniel as a consultant nurse in the Division of County Health Work. Miss Fisher had been supervising nurse in the Durham Health Department. Gates County joined the district to be composed of Hertford and Gates, the work to become effective July 1, 1940.

In the Division of Industrial Hygiene, there was issued a profusely illustrated one hundred page printed report presenting the results of a study of effects of exposure to dust in the mining and milling of pyrophyllite, the field work for which was done during the previous biennium. One of the outstanding achievements of this division was the design of seven industrial exhaust ventilation systems for the control of dust. Three of these had already been completed by June 30 and the installation of the others was already underway.

With the closure of the public schools for the summer holidays, preparations were made for health courses to be given thirty white and thirty colored teachers at the University of North Carolina and the North Carolina College for Negroes at Chapel Hill and Durham respectively. These courses covered a six weeks period ending approximately July 20, 1940, and were made possible by a grant of \$4,700 by the General Education Board. While it would be premature to attempt an appraisal of what was accomplished by this organization during its first year of existence, it may be stated that educational and health personnel alike coöperated generously, that certain procedures were found to be satisfactory while practical considerations necessitated the modification of others, and that progress was made toward the maturation of a generally acceptable school health program.

On January 1, 1940, Dr. Ralph J. Sykes assumed the duties of venereal disease consultant in the Department of Epidemiology. Dr. Sykes had previously served for several years as county health officer first in Surry and later in Halifax. Dr. Frank S. Fellows, Surgeon

with the United States Public Health Service who has been assigned to North Carolina for several years, continued to render valuable service in the capacity of venereal disease consultant.

The main accomplishment in the Division of Epidemiology was the great expansion of venereal disease control program. This was largely as a result of financial aid from the Zachary Smith Reynolds Foundation and the United States Public Health Service. In June, 1936, there were 120 clinics in operation. They treated 13,304 patients. In June, 1940, as a result of the aforementioned financial aid, the number of clinics have been increased to 255 in which 27,814 patients received treatment in a single month. The system of mechanical tabulation set up in a central tabulating unit under the direction of this division reached its full stride in the early months of 1940. A complete progress record is kept on every patient receiving treatment. The central tabulating unit renders valuable assistance to other divisions of the State Board of Health.

The Manual of Minimum Standards for conducting venereal disease clinics prepared by Drs. Fellows and Leiby still continues to be very helpful to physicians and nurses and others concerned with the conduct of venereal disease clinics. Financial aid was given through this department to all organized counties in the state. Fifty-one clinics were supplied with combination darkfield and general purpose microscopes and sixteen of the larger clinics were given fluoroscopes.

On January 1, Dr. Emmett S. Lupton was employed as assistant director in the Division of Preventive Medicine. Dr. Lupton had just completed his internship in pediatrics at the Duke Hospital. In the Division of Preventive Medicine, organized maternal and child health clinics were being operated in 55 counties. An increasing number of infants and expectant mothers among the poorer classes were in attendance on these monthly clinics. A total of approximately 250 physician were coöperating on a part-time basis at the close of the fiscal year, June 30.

The circulation of the *Health Bulletin* increased from about 52,000 to 60,000 monthly copies during the year.

In the Division of Oral Hygiene, there were no material changes except some expansion and expenditures of additional funds in the work of that division, necessitating the employment of an additional number of dentists.

The total expenditures for the State Board of Health for the fiscal year ending June 30, 1940, were \$1,380,174.90. Of this amount \$370,-057.67 was appropriated by the Legislature, \$162,813.81 by the Zachary Smith Reynolds Foundation for syphilis control work, \$229,872.28 by the United States Children's Bureau, \$318,148.38 general and \$175,-557.72 venereal disease by the United States Public Health Service, and \$123,465.04 from fees received by the Laboratory in water taxes, etc., and other miscellaneous items.

A detailed account of the organization work of each one of the divisions covering the activities of this biennium will be found in the pages to follow.

REPORT OF THE SECRETARY-TREASURER AND STATE HEALTH OFFICER

July 1, 1938-June 30, 1940

By CARL V. REYNOLDS, M.D.

Excerpts of the Activities as Recorded in Minutes:

The first meeting of the North Carolina State Board of Health for the biennium beginning July 1, 1938-June 30, 1940, was held August 5, 1938. This was a special called meeting to discuss and endorse the labor scale of wage of PWA employees for the State Laboratory Building before we could go further with our building program. Dr. John H. Hamilton, Director of the Division of Laboratories, was present and presented the requirement of the PWA authorities, and submitted the proposed minimum wage schedule for the Laboratory Buildings of the N. C. State Board of Health. Dr. G. G. Dixon made a motion to endorse the proposed wage schedule. Motion seconded by Dr. W. T. Rainey, and carried unanimously. (Wage scale filed in Minute Book.)

The Secretary discussed the complaints arising from the physicians of the state regarding the motion to charge for specimen containers that was approved and passed at the June 1938 regular meeting of the Board.

Doctor Hamilton, the Director of the Laboratory of Hygiene, was called upon to give his views regarding the complaints, who stated "he had received probably 25 or 30 critical letters, but that he had not received as many as he had expected; that he had been afraid that specimen examinations would decline, etc. But, to the contrary, though a definite report had not been compiled, the mailing room force stated more specimen containers had been requested than ever before in said period for blood specimens, water samples, etc. Doctor Hamilton also discussed the waste in containers until the Laboratory started charging for containers for water; Wassermann tubes; needles, etc.; that the Laboratory operated on a budget, and a great many people criticized who did not understand the Laboratory's financial problems, and that the Laboratory is now doing twice as many examinations as last year at this date; and with an increased volume of business and expenditures, the Laboratory certainly needed an increase in receipts, or an increased budget."

Dr. H. Lee Large made the following motion: "that the matter of charging for specimen containers from the Laboratory of Hygiene be referred to Doctor Reynolds and Doctor Hamilton to investigate the advisability of applying a said amount from the Z. Smith Reynolds Foundation Fund and the Federal funds for control of syphilis, by making an appropriation to the Laboratory to cover the cost of containers, etc., and report back to the Board at its next meeting." Motion seconded by Doctor Rainey, and carried.

The Secretary presented to the Board the plan of distribution of allocation of funds from the Federal government to the various counties within the state. This was done by (1) population of 1930; (2) allotment according to

population of 1930; (3) allotment according to financial needs; (4) allotment according to venereal disease problem.

The above plan of distribution of venereal disease funds was approved by the Board.

The Secretary read a substitution of a new paragraph for the present Section 8, and also the adoption of Section 22 of the "Sanitary Rules and Regulations Governing Beauty Culture Shops, Schools, Colleges and Other Hair-dressing Establishments." A motion was made by Doctor Dixon, seconded by Doctor Rainey, that the substitution and adoption of Section 22 be approved if the following sentence be inserted in Section 8 . . . "and there must be attached thereto, and in the possession of the owner or manager of said shop, the original blood Wassermann Laboratory report, or other acceptable laboratory test for syphilis performed by an approved laboratory." Motion carried unanimously, and the substitution and Section 22 follows:

"Sec. 8. No owner, or manager, of a beauty establishment shall permit any person suffering with a communicable disease, or from a venereal disease in a communicable form, to work in said beauty establishment. Each operator will be required to obtain a health certificate from an authorized physician, and there must be attached thereto, and in the possession of the owner or manager of said shop, the original blood Wassermann laboratory report, or other acceptable laboratory test for syphilis performed by an approved laboratory. This certificate must be renewed at least once each year and whenever the Board may make a special request for renewal. Official health certificate blanks may be obtained from the Board of Cosmetic Art Examiners."

"Sec. 22. A sanitary rating card must be displayed in a conspicuous place in each beauty parlor or any other place where beauty culture service is rendered."

"It is understood that the enforcement of these rules and regulations is a function of the North Carolina Board of Cosmetic Art Examiners."

There was a special called meeting of the Board on August 30, 1938, for the purpose of opening bids for the buildings on the Farm of the Laboratory of Hygiene. Mr. Wm. H. Deitrick, the architect, was asked to take charge of the opening of the bids, etc., and he stated to the contractors that it was a rush job and must be started not later than September 2, 1938.

After opening and reading of the bids, Dr. Carl V. Reynolds, Secretary, Dr. John H. Hamilton, Director of the Division of Laboratories, and Mr. Deitrick, proceeded to meet with Mr. R. G. Deyton, Assistant Director of the Budget, who approved the awarding of the contracts.

Upon reassembling of the Board, Dr. G. G. Dixon made the motion that the bid of V. P. Loftis, Charlotte, N. C., for the general contract in the amount of \$33,000 be accepted, and that the President and Secretary-Treasurer of the Board be authorized to execute the contract. The motion was seconded by Dr. W. T. Rainey, and carried unanimously.

Motion was made by Dr. G. G. Dixon to accept the bid of Biemann and Rowell, Raleigh, N. C., for plumbing of \$4,383, and that the President and Secretary-Treasurer of the Board be authorized to execute the contract. Motion was seconded by Dr. W. T. Rainey, and passed unanimously.

Motion was made by Dr. G. G. Dixon that the bid of Biemann and Rowell, Raleigh, N. C., for heating in the amount of \$3,354.00 be accepted, and that the President and Secretary-Treasurer of the Board be authorized to execute

the contract. The motion was seconded by Dr. W. T. Rainey, and carried unanimously.

Mr. Deitrick, the architect, asked permission of the Board to return the certified checks to all bidders except the ones that belonged to the contractors accepting the bids for general contracts, plumbing and heating. It was moved by Doctor Large, seconded by Doctor Baity, that the certified checks be returned to the contractors, and carried unanimously.

Doctor Dixon made a motion to endorse the proposed wage scale for the Central Laboratory of Hygiene Building as presented. Motion seconded by Doctor Rainey, and carried. (Proposed wage scale filed in Minute Book.)

Minutes of the Board meeting held at Pinehurst, N. C., on May 4, 1938, were read and approved.

Resolutions were read with regard to the creating of the Thomasboro Sanitary District, Mecklenburg County, and upon motion of Dr. G. G. Dixon, seconded by Dr. H. G. Baity, the resolutions were approved. (Resolutions of State Board of Health Creating the Thomasboro Sanitary District, Mecklenburg County, filed in Minute Book.)

The purpose of the called meeting of the North Carolina State Board of Health on December 23, 1938, was to open bids for the excavation of the lot for the State Laboratory of Hygiene Building on Caswell Square and the installation of the pumping equipment and water tank for the Farm Laboratory, in addition to pass on resolutions to form certain sanitary districts.

On motion of Dr. G. G. Dixon, seconded by Dr. John LaBruce Ward, the "resolution ordering the filing of bids" was adopted unanimously. (Resolutions filed in Minute Book.)

After opening and reading of the bids Mr. Wm. H. Deitrick, the architect, reported that F. N. Thompson, Raleigh, N. C., was the lowest and best bidder for the excavation for the State Laboratory of Hygiene, in the sum of \$1,355 and that Dillion Supply Company, Raleigh, N. C., was the lowest and best bidder for the construction of the tank and pumping equipment in the sum of \$2,530, and that the Secretary-Treasurer of the Board of Health be authorized to execute the contracts. A representative from the Budget Bureau was present, and approved the awarding of the contracts.

Dr. G. G. Dixon moved that the "resolution awarding contracts" be made as follows: "that the bids of F. N. Thompson for the construction of excavation for the State Laboratory of Hygiene in the sum of \$1,335, and the bid of Dillon Supply Company for the construction of Pumping Equipment for Laboratory Farm in the sum of \$2,530, are hereby accepted, declared to be the lowest and best bids; however, this award shall not be effective until the awardees shall have been notified in writing by the Secretary, Dr. Carl V. Reynolds, of the State Board of Health of such awards. That upon the awardees being so notified in writing a contract for the construction of said work, as heretofore prescribed by the plans, specifications and contract documents, shall be forthwith executed for said construction." Motion seconded by Dr. John LaBruce Ward, and passed unanimously.

At this meeting Dr. John H. Hamilton, Director of the Laboratory of Hygiene, explained the need for adopting a resolution to present to PWA to provide for a re-distribution of the State Laboratory of Hygiene Building Fund.

Upon motion of Dr. H. G. Baity, seconded by Dr. G. G. Dixon, a resolution requesting the Federal Emergency Administration of Public Works to redistribute the Laboratory Building Fund, was carried unanimously.

A request was presented to the Board for an extension of time for the completion of the Farm Building from fifteen to twenty-five days. On motion of Doctor Baity, seconded by Doctor Ward, the time for completion of the Laboratory Farm Building was extended to January 25, 1939, this being Project "NC 1128F, Laboratory and Horse Barn." Motion carried.

At this meeting Dr. Hubert B. Haywood moved that the North Carolina State Board of Health give a vote of thanks to Dr. John H. Hamilton, Director of the State Laboratory of Hygiene, for his untiring and enthusiastic efforts and interest in the construction of the new Laboratory Buildings. Motion was seconded by Dr. G. G. Dixon, and carried unanimously.

Mr. James P. Stowe moved that Doctor Reynolds, the Secretary, be given authority to employ a heating, plumbing and electrical engineer for service in connection with the State Laboratory of Hygiene Building; and, a civil engineer's services in connection with the Laboratory Farm for fencing. Motion seconded by Doctor Dixon, and passed.

The Secretary presented a resolution abolishing the Lower Creek Sanitary District, Caldwell County, passed on by the Board at a meeting on May 7, 1935. On motion of Doctor Dixon, seconded by Doctor Rainey, the resolution of May 7, 1935, creating the Lower Creek Sanitary District, Caldwell County, was rescinded. Motion carried unanimously.

A resolution was presented regarding the establishment of the East Lenoir Sanitary District, Caldwell County, and on motion of Doctor Dixon, seconded by Mr. Stowe, the motion carried.

On motion of Doctor Rainey, seconded by Doctor Baity, the following resolution was passed for the purpose of complying with Section 4, Chapter 100, Public Health Laws of 1927, relative to the creation of sanitary districts: "*Resolved*, that the Secretary and State Health Officer is hereby authorized to designate a representative who shall name a time and place, within a proposed sanitary district, at which a public hearing concerning the creation of such proposed sanitary district shall be held. Such representative shall see that the required notice is published."

On motion of Doctor Rainey, seconded by Doctor Dixon, the following policy was adopted by the Board to be used for a placard for distribution: "Each employee must wash his hands thoroughly before beginning work, and after each visit to toilet, using warm water, soap and an individual towel. By order of the State Board of Health, Raleigh, N. C." Motion carried.

The State Board of Health met in a special called meeting January 27, 1939, for the purpose of opening bids for letting contracts for the Central Building of the State Laboratory of Hygiene; heating and plumbing; elevators; refrigeration; fencing, etc. Mr. Wm. H. Deitrick, Consulting Architect, was asked to take charge of the opening of the bids. Mr. C. L. Mann, Engineer, had charge of bids for fencing the grounds of the State Laboratory of Hygiene Farm, and read the resolution "ordering the filing of bids." Dr. G. G. Dixon moved that the resolution be adopted. Motion seconded by Dr. J. N. Johnson, and carried.

After opening, reading and analyzing the bids for fencing of the Laboratory Farm, Mr. Mann announced that J. M. Gregory, Raleigh, N. C., was the lowest

and best bidder for the construction of the Boundary Fence in the sum of \$4,986; and that the Secretary-Treasurer of the Board of Health be authorized to execute the contract. Representatives of the Budget Bureau were present, and approved the awarding. Upon motion of Doctor Johnson, seconded by Doctor Dixon, the resolution "awarding the contract" for the construction of the Boundary Fence of the State Laboratory of Hygiene Farm, in the sum of \$4,986, was adopted.

The resolution ordering the "filing of bids for general contract, heating and plumbing, elevators and refrigeration" was read. After opening, tabulating and reading of the bids, it was announced that Charles W. Angle, Inc., Greensboro, N. C., was the lowest and best bidder for the construction under general contract for the Central Building of the State Laboratory of Hygiene in the sum of \$120,333; that the bid of the Brewer Heating and Engineering Company, Winston-Salem, N. C., for the plumbing and heating work in the sum of \$6,300 for plumbing and \$6,600 for heating; that the bid of Otis Elevator Company, Greensboro, N. C., for the construction of the elevators in the sum of \$8,415, and that of K. E. Stahl Company, Raleigh, N. C., for the refrigeration work in the sum of \$2,700, and that the Secretary-Treasurer of the Board of Health be authorized to execute the contracts. Representatives of the Budget Bureau were present, and approved the awarding of the contracts.

The "resolution awarding contracts" was read, and Doctor Baity moved that contracts be awarded to low bidders in each of the following sections:

General contract for the Central Building of the Laboratory to Charles W. Angle, Inc., Greensboro, N. C., in the sum of \$120,333;

Heating contract to Brewer Heating and Engineering Company, Winston-Salem, N. C., in the sum of \$6,600;

Plumbing contract to Brewer Heating and Engineering Company, Winston-Salem, N. C., in the sum of \$6,300;

Elevator contract to the Otis Elevator Company, Greensboro, N. C., \$8,415.

Refrigeration contract to K. E. Stahl Company, Raleigh, N. C., \$2,700.

The motion was seconded by Doctor Dixon, and carried unanimously.

For information regarding proposed bills before the legislature, the Secretary discussed the following bills with the Board members: the marriage law; the diphtheria bill; roadside sanitation; per diem bill for county boards of health meetings, etc.

The Embalmer's bill was brought up for renewed discussion, and the Secretary was requested to have a bill prepared removing responsibility of election of members of the Embalmers Board by the State Board of Health.

A special called meeting of the Board of Health was held February 16, 1939, for the purpose of opening bids for the letting of contracts for equipment and furnishings for the new Laboratory of Hygiene and Farm Laboratory; and, for the passing of resolutions creating a sanitary district.

Dr. G. G. Dixon moved that the "resolution ordering the filing of bids" be adopted. Motion seconded by Dr. W. T. Rainey, and carried.

After opening, reading and tabulation of the bids for equipment and furnishings of the new Laboratory of Hygiene Building and Farm Laboratory, it was announced that the following were the lowest and best bids:

American Sterilizer Company, Erie, Pa.	
Autoclaves and water still.....	\$ 4,023.93
Laboratory Furniture Company, Long Island, N. Y.	
Laboratory furniture.....	12,677.77
J. M. Stackhouse, Lake Junaluska, N. C.	
Projection booth equipment and accessories.....	3,282.77
Raleigh Tractor & Equipment Co., Raleigh, N. C.	
Terracing and ditching machine.....	93.50
Southeastern Equipment Company, Siler City, N. C.	
Auditorium chairs; steel storage shelves and lockers.....	1,459.92
Dillon Supply Company, Raleigh, N. C.	
Machine shop equipment.....	rejected

The above being the lowest and best bidders for furniture and equipment for the State Laboratory of Hygiene and Farm Laboratory, in a sum totalling \$21,537.89, Doctor Dixon moved that the bid of the American Sterilizer Company, Erie, Pa., be accepted for autoclaves and water stills in the sum of \$4,023.93. Motion seconded by Doctor Rainey, and carried.

Doctor Dixon moved that the bid of the Laboratory Furniture Company, Long Island, N. Y., for laboratory furniture, in the sum of \$12,677.77 be accepted. Motion seconded by Doctor Rainey, and carried.

Doctor Ward moved that the bid of J. M. Stackhouse, Lake Junaluska, N. C., be accepted for projection booth, equipment and accessories, in the sum of \$3,282.77. Motion seconded by Doctor Dixon, and carried.

Doctor Dixon moved that contract for terracing and ditching machine be awarded to the Raleigh Tractor and Equipment Company, Raleigh, N. C., in the sum of \$93.50. Motion seconded by Doctor Baity, and carried.

Doctor Dixon moved that the contract for lockers, steel storage shelves and auditorium chairs be awarded to the Southeastern Equipment Company, Siler City, N. C., in the sum of \$1,459.92. Motion seconded by Doctor Ward, and carried.

Motion was made by Doctor Dixon, seconded by Doctor Rainey, that since the bid of the Dillon Supply Company, Raleigh, N. C., for machine shop equipment exceeded the preliminary estimate, that their bid be rejected. Motion carried.

Mr. Wm. H. Deitrick, Consulting Architect for the Laboratory Building, appeared before the Board and reported that he had been unable to secure approval from the Budget Bureau of contract documents, etc., for the main Laboratory Building. Mr. Deitrick stated that the Budget Bureau did not approve of the brick being one-fourth inch thicker than the brick used in the U.C.C. Building, the Bureau's contention being that the brick should be identical in style, color and texture. The Laboratory Building is of Georgian style, very pleasing from architectural standpoint. Mr. Chas. W. Angle, the contractor, wrote that the difference in cost would be \$962.55 more to use the standard size brick, the standard being one-fourth inch smaller. Mr. Deitrick stated the cost to him as architect to change specifications, etc., would amount to \$200 or more. Mr. Deitrick also presented a copy of letter from Mr. Frank B. Simpson, architect for the U.C.C. Building to the effect that he was of the same opinion, that is, the style of architecture utilized in the Laboratory Building called for an over-size brick while the style of architecture for the U.C.C. Building called for standard size.

After discussions, Dr. G. G. Dixon made the following motion to be sent to Mr. Deyton, Assistant Director of the Budget Bureau: "that since both architects, Mr. Simpson and Mr. Deitrick, agree that the present architectural structures are in harmony, and as should be, that the Board go on record advocating that the Budget Bureau accept the State Laboratory of Hygiene Central Building." Motion was seconded by Dr. John LaBruce Ward, and carried unanimously.

A resolution was read with regard to the creating of the Bessemer Sanitary District, Guilford County, in accordance with Chapter 100, Public Health Laws of 1927. Upon motion of Doctor Rainey, seconded by Doctor Dixon, the resolution creating the Bessemer Sanitary District was approved. (Resolution creating Bessemer Sanitary District filed in Minute Book.)

Motion was made by Doctor Ward that the President appoint a committee to draw suitable resolutions for Mr. James P. Stowe, a member of the Board, who passed away Sunday night, February 12, 1939, and that a copy of these resolutions be sent to the family of Mr. Stowe. Motion was seconded by Doctor Dixon, and carried unanimously. Accordingly, President Craig appointed Doctor Ward, Chairman, and Doctors Johnson and Batty as the Committee.

On May 1, 1939, the regular meeting of the State Board of Health was called together at the 29th annual meeting of the N. C. Public Health Association held in Greensboro, N. C., at the King Cotton Hotel. The main object of the meeting was the selection and the election of the Secretary-Treasurer and State Health Officer.

Dr. G. G. Dixon moved that Dr. Carl V. Reynolds be reelected State Health Officer and Secretary-Treasurer, for a term of four years, at a salary of \$7,200 per year. The motion was seconded by Dr. Hubert B. Haywood, Dr. H. Lee Large, and other members of the Board, and carried unanimously.

Pursuant to a motion passed at a meeting of the Board held on February 16, 1939, a copy of the following resolution was sent, as requested, to Mrs. James P. Stowe, Charlotte, N. C., and to the press:

"Resolved: That in the passing of Dr. James P. Stowe we have lost a co-worker and friend whose genial personality, friendliness and ability will long be remembered. That he has, for many years, discharged his duties to the people of North Carolina with untiring fidelity and with credit to the pharmaceutical association. That we extend to his family our sincere condolence in their bereavement.

"Let us be patient! These severe afflictions
Not from the ground arise
But oftentimes celestial benedictions
Assume this dark disguise.

We see but dimly through the mists and vapors.
Amid these earthly damps.
What seem to us but sad funereal tapers
May be heaven's distant lamps."

Signed: JOHN LABRUCÉ WARD, M.D.,
H. G. BATTY, Sc.D.,
J. N. JOHNSON, D.D.S."

There was presented to the Board "Board Policies for Allocation of Funds to Counties for Health Work" for the fiscal year beginning July 1, 1939. The

policies were approved by the Board with the following alterations from the policies in existence the year previous:

5 piece units	\$1,392.00 per annum
4 piece units	1,272.00 per annum
3 piece units	1,104.00 per annum
2 piece units	936.00 per annum
2 piece units (consisting of Health Officer and clerk)	768.00 per annum

On June 5, 1939, the Board met in a special called meeting for the purpose of adopting an amendment to the application for a grant for Laboratory construction in order to include a central heating plant for the buildings on Caswell Square, etc.

Secretary Reynolds presented a letter received from Dr. J. M. Rosenau, Director of the Division of Public Health, at the University School of Medicine, setting forth courses and degrees offered by the Division of Public Health, etc. Doctor Reynolds stated that the syphilologist had not, as yet, been selected but several were being considered.

A copy of a letter addressed to Dr. H. G. Baity, Chapel Hill, N. C., from Governor Clyde R. Hoey, was read, stating that Mr. C. C. Fordham, Jr., Greensboro, N. C., had been appointed to succeed Mr. Stowe, deceased, and that Mr. Fordham's commission was being forwarded.

On motion of Doctor Johnson, seconded by Doctor Large, Dr. G. M. Cooper was unanimously re-appointed as Assistant State Health Officer, for a period of four years.

The Secretary informed the Board that Dr. H. F. Easom, Director of the Division of Industrial Hygiene, had resigned, effective as of June 13, 1939.

Dr. John H. Hamilton, Director of the Division of Laboratories, was present and presented to the Board the proposed plans for the Central Heating Plant from which the Laboratory Building would secure steam for the operation of equipment and heating of the building, and the advisability of an amendment to the application of the Board to the PWA for a free grant.

On motion of Dr. G. G. Dixon, seconded by Dr. Hubert B. Haywood, a resolution was unanimously adopted by the State Board of Health requesting the Federal Emergency Administration of Public Works to increase the amount of the Free Grant for Docket NC 112SF in proportion to the amount of new funds which will be made available to the project by the State of North Carolina to include the enlarging of the existing central heating plant by the purchase and installation of new boilers to supply heating facilities to the Cotton Classing Warehouse, the Laboratory of Hygiene and the Unemployment Compensation Building; also to provide connecting tunnels and pipe lines between the Central Heating Plant and these buildings, etc. (Resolution filed in Minute Book.)

Doctor Hamilton also presented to the Board a revised minimum wage schedule for the smallpox vaccine building; small animal buildings, horse barn and sheep barn of the State Laboratory of Hygiene Farm. Dr. J. N. Johnson moved that the proposed wage scale be adopted as presented. Motion seconded by Dr. G. G. Dixon, and carried. (Wage scale filed in Minute Book.)

The called meeting on June 20, 1939 was for the purpose of opening bids

for letting of contracts for small animal houses for the State Laboratory of Hygiene Farm, heating, furniture and equipment bids for the Central Laboratory Building.

The oath of office was administered to Mr. C. C. Fordham, Jr., of Greensboro, N. C., as a new member of the Board.

Upon motion of Dr. G. G. Dixon, seconded by Dr. W. T. Rainey, the "resolution ordering the filing of bids" for small animal houses; plumbing and heating of small animal houses, and furniture, was passed.

After opening, reading and tabulating the bids, Mr. Wm. H. Deitrick, the architect, announced that the lowest and best bidders for the above work were M. G. Newell Company, Greensboro, N. C. (Group No. 1 and Group No. 2); Kewaunee Mfg. Company, Adrian, Mich.; Dillon Supply Company, Raleigh, N. C.; Ervin-West Construction Company, Statesville, N. C.; Biemann & Rowell, Raleigh, N. C.; Odell Small Plg. & Htg. Company, Durham, N. C.

The "resolution awarding contracts" was read, and adopted. Motion was made by Doctor Dixon that the Board accept the low bid of Ervin-West Construction Company for the construction of small animal houses, subject to approval of PWA, in the sum of \$28,440. Motion seconded by Doctor Johnson, and carried.

Motion was made by Doctor Baity to accept the low bid of Biemann & Rowell for heating of small animal houses, subject to approval of PWA, in the sum of \$3,047. Motion seconded by Doctor Rainey, and carried.

Motion was made by Doctor Dixon that the Board accept the low bid of Odell Small Plg. & Htg. Company for plumbing of animal buildings, subject to approval of PWA, in the sum of \$1,999.50. Motion seconded by Doctor Baity, and carried.

Motion was made by Doctor Rainey, seconded by Doctor Johnson, that the Board accept the low bid of M. G. Newell Company, subject to approval of PWA, for furniture and equipment for laboratory, Group No. 1, \$472.43 and Group No. 4, \$442. Motion carried.

Motion was made by Doctor Dixon that the Board accept the low bid of Kewaunee Mfg. Company for laboratory furniture in the sum of \$822.50, subject to approval of PWA. Motion seconded by Doctor Rainey, and carried.

Motion was made by Doctor Rainey that the Board accept the bid of the Dillon Supply Company for equipment, subject to the approval of PWA, in the sum of \$1,970.58. Motion seconded by Doctor Dixon, and carried.

Motion was made by Doctor Baity, seconded by Doctor Johnson, that the Board reject the bid of M. G. Newell Company in the sum of \$1,410.10, Group No. 2. Motion unanimously carried.

Mr. Bernard Crocker, Jr., Engineer, presented the bids for the heating plant improvements, Caswell Square. Dr. H. G. Baity moved that the "resolution ordering the filing of bids" be adopted. Motion seconded by Dr. J. N. Johnson, and carried.

After opening and reading of the bids for the construction of heating plant improvements on Caswell Square, it was reported that the Brewer Heating and Engineering Company, Winston-Salem, N. C., was the lowest and best bidder. The "resolution awarding the contract" was read, and motion was made by Doctor Baity that the Board accept the low bid of the Brewer Heating and Engineering Company, for heating plant improvements, subject to ap-

proval of PWA. in the sum of \$14,998. Motion seconded by Doctor Dixon, and carried.

Dr. John H. Hamilton, Director of the Division of Laboratories, was present and discussed, at length, the Resolution that was presented at the June 5, 1939 Board meeting regarding the approval of amendment to the application for a grant for laboratory construction for the Central Heating Plant for buildings on Caswell Square. Doctor Hamilton explained how and why a few changes should be made in the Resolution such as inserts in the low pressure boiler paragraph; a breakdown in Item No. 6 under Central Heating Plant; item covering piping, conduits, insulation, etc.

Motion was made by Doctor Baity that the Resolution applying for a change in grant for construction of Central Heating Plant on Caswell Square be made in lieu of the Resolution which was passed at the Board meeting on June 5, 1939. Motion seconded by Doctor Johnson, and carried unanimously. (Resolution filed in Minute Book.)

Doctor Hamilton called the Board's attention to the fact that there would be approximately \$5,000 in unallocated funds, derived from sale of specimen containers, and which, in his opinion, should be transferred to the Building Fund.

Upon motion of Doctor Dixon, seconded by Doctor Rainey, the Board unanimously approved the following resolution to be presented to Mr. R. G. Deyton, Assistant Director of the Budget Bureau: "*Resolution.* The members of the North Carolina State Board of Health, in a called meeting, June 20, 1939, respectfully request that the Budget Bureau give an additional allotment of \$5,000 of unused funds to the State Laboratory of Hygiene, which was acquired by the sale of specimen containers to the physicians of North Carolina, and that this amount be allocated to the State Laboratory of Hygiene Building Fund, in order that the State Board of Health may receive all of the 45 per cent free grant to which we are entitled."

The State Board of Health met in regular session in the office of the Health Building, Saturday, October 7, 1939. The meeting was called to order by the President, Dr. S. D. Craig.

Oaths of office were administered to Dr. G. G. Dixon, Dr. John LaBruce Ward, and Dr. Herman G. Baity, for a term of four years each.

Minutes of the Board meeting of May 1, 1939, were approved as read.

Dr. G. G. Dixon made a motion that all special called meetings regarding the construction, letting of contracts, etc., for the Laboratory of Hygiene Building and Laboratory Farm, be deferred until after the completion of all projects. Motion seconded by Dr. J. N. Johnson, and carried.

The Secretary, Doctor Reynolds, read a letter from H. S. Hanes, Secretary of the N. C. Funeral Directors & Embalmers Association, Greensboro, N. C., stating that at the Embalmers Board meeting held in Wilmington, N. C., June 15, 1939, Mr. David T. Yow, High Point, N. C., was elected a member of the N. C. State Board of Examiners for Embalmers, to serve for a period of five years. Also to the effect that the appointments of Mr. F. T. Paul, Washington, N. C., who was elected in May 1938, and the appointment of Mr. Ed Dunn, Asheville, N. C., elected in May 1937, each for a term of five years, to date, had not been made official.

The General Assembly of 1939 failed to pass a law eliminating from the statutes the provision that the members of the State Board of Examiners and

Embalmers be approved by the N. C. State Board of Health; hence Doctor Johnson moved that the Board do elect Mr. Yow, Mr. Paul and Mr. Dunn, and instructed the Secretary to so inform Mr. Hanes. Motion seconded by Doctor Rainey, and carried unanimously.

Doctor Reynolds reported that Robeson County was having trouble with the County Health Department on account of finances; hence, with the approval of the State Board of Health, the Board would like to compromise and allow travel on a five cents per mile basis for this particular County instead of car depreciation and three cents per mile for this one year. Doctor Haywood made a motion that travel allowance for Robeson County be based on five cents per mile instead of car depreciation and three cents per mile for this year. Motion seconded by Doctor Ward, and carried.

The Secretary discussed with the Board, at great length, the progress made in the public health program in the schools of the State. This is a coöperative service between the State Board of Health and the State Board of Education, the Rockefeller Foundation donating \$50,000 toward the program to be expended over a period of five years, the State gradually taking over the program. The service is designated as "School Health Coördinating Service," and consists of a coördinator; a nutritionist; a physical educator; a school nurse; a colored physician; a colored field worker, and clerks. Dr. J. F. Kendrick is loaned for an undetermined period by the Rockefeller Foundation to supervise the work.

The Secretary reported to the Board that the Reynolds Foundation had approved and set aside the sum of \$17,500 for a Professor in Venereal Disease in the School of Public Health at Chapel Hill, and for a research program. After a very careful investigation and consideration by the Board of Health and a Committee from the School of Medicine at Chapel Hill. Dr. Wm. LeRoy Fleming of the School of Hygiene and Public Health, Johns Hopkins University, had been nominated and elected.

The Secretary discussed with the Board the possibility of the Rockefeller Foundation becoming interested in establishing at the School of Public Health, Chapel Hill, an epidemiologist for epidemiological study of the syphilis control program.

The Secretary reported that Dr. Thomas F. Vestal had been appointed to fill the vacancy created by the resignation of Doctor Easom, as Director of the Division of Industrial Hygiene, Effective October 15, 1939.

Dr. John H. Hamilton, Director of the Division of Laboratory of Hygiene, appeared before the Board, and discussed the adoption of another resolution accepting the offer of the U. S. of America for financing the construction of the Laboratory Building and structure including the necessary equipment and landscaping therefor, the improvements to the existing heating plant, including the necessary tunnels and piping.

After discussion of the offer of the U. S. of America to amend the contract created by the acceptance on June 29, 1938, of the offer of the U. S. of America dated June 24, 1938, the "resolution accepting the amendatory offer of the United States of America" was introduced and read in full by Dr. G. G. Dixon, who moved its adoption. (Resolution filed in Minute Book.) Dr. W. T. Rainey seconded the motion to adopt the resolution and the roll being called the following members voted aye: Dr. J. N. Johnson, Dr. G. G. Dixon, Dr. H. G. Baity, Dr. W. T. Rainey, Dr. Hubert B. Haywood, Dr. John LaBruce

Ward, Mr. C. C. Fordham, Jr., and Dr. S. D. Craig. The members voting nay: None. The President thereupon declared said motion unanimously carried and said resolution adopted as introduced and read.

Dr. John H. Hamilton, Director of the Division of Laboratory of Hygiene, presented a resolution requesting the PWA for an extension of time for completion of the building program, etc., for the Laboratory of Hygiene. (Resolution filed in Minute Book.) Dr. G. G. Dixon moved that the resolution be adopted as read. Motion seconded by Dr. H. G. Baity and the roll being called the following members voted aye: Dr. J. N. Johnson, Dr. G. G. Dixon, Dr. H. G. Baity, Dr. W. T. Rainey, Dr. Hubert B. Haywood, Dr. John LaBruce Ward, Mr. C. C. Fordham, Jr., and Dr. S. D. Craig. The following members voted nay: None. The President thereupon declared said motion unanimously carried and said resolution adopted as introduced and read.

The Board met in a special called session January 12, 1940, mainly on account of the importance of the Board's action toward the establishment of two proposed sanitary districts—North Asheboro-Central Falls Sanitary District (Randolph County) and the Haw River Sanitary District (Alamance County).

Dr. G. G. Dixon offered the resolution of the State Board of Health naming the time and place of a public hearing concerning the creation of the North Asheboro-Central Falls Sanitary District, etc., and moved its adoption. Motion seconded by Dr. J. N. Johnson, and carried. (Resolution filed in Minute Book.)

Doctor Dixon offered the resolution of the State Board of Health naming the time and place of a public hearing concerning the creation of the Haw River Sanitary District, etc., and moved its adoption. Motion seconded by Doctor Johnson, and carried. (Resolution filed in Minute Book.)

Secretary Reynolds gave a brief synopsis of the work of Dr. D. F. Milam who is working with the N. C. State Board of Health in collaboration with the Rockefeller Foundation and Duke University Medical School, for plans of a "Study of Nutrition" in North Carolina with the object of assessing the nutritional status of a section of the population by means of the best scientific methods now available, and laying plans for a future program of improvement. The work is being financed principally by the Rockefeller Foundation, and the personnel consists of Doctor Milam of the Rockefeller Foundation as Director; an Associate Physician; three technicians; and a secretary. The State Board of Health furnishes only a dietitian-nurse.

A motion was made by Doctor Johnson that "all teachers and pupils suffering with Vincent's Infection shall be excluded from the public schools of the state until they have received treatment for same and reported free of the infection by a person regularly licensed to practice medicine or dentistry in North Carolina before being re-admitted to the schools of the State.

"That all food handlers suffering from Vincent's Infection shall be excluded from employment while infected with Vincent's Infection until he or she has received treatment for same and reported free of the infection by a person regularly licensed to practice medicine or dentistry in North Carolina before resuming his or her duty in the state."

Motion seconded by Doctor Ward and carried unanimously.

Upon motion of Doctor Ward, seconded by Doctor Dixon, the following resolution was unanimously adopted by the Board: "that the Director of the Division of Laboratories be instructed to make available diphtheria antitoxin

in packages of 20,000 units; also that the packages containing 1,000 units shall be so labeled that the physician using same will be made to understand that this is for immediate temporary immunization ONLY and not for therapeutic purposes."

Doctor Reynolds presented to the Board, in a brief way, the plan of the Merit System as recommended by the Children's Bureau of the U. S. Department of Labor for employees in state and local agencies administering maternal and child health services, and services for crippled children, or child welfare services under the Social Security Act.

Doctor Ward moved that the plan "standards for the establishment and maintenance of the merit system of personnel administration for the State Board of Health of North Carolina" be adopted as presented. Motion seconded by Doctor Johnson, and carried. (Standards for the Establishment, etc., filed in Minute Book.)

Doctor Dixon moved that the Secretary of the Board be authorized to set up a Board of Examiners to meet the requirements of the Merit System as outlined by the Children's Bureau of the Federal Government. Motion seconded by Doctor Johnson, and carried.

At the called meeting of the State Board of Health Wednesday, February 21, 1940, further consideration was given to the adoption of resolutions creating the North Asheboro-Central Falls Sanitary District in Randolph County and the Haw River Sanitary District in Alamance County.

Dr. H. G. Baity moved for the adoption of the resolution creating the North Asheboro-Central Falls Sanitary District in Randolph County. The motion was seconded by Dr. J. N. Johnson, and carried unanimously. (Resolution filed in Minute Book.)

Doctor Baity moved for the adoption of the resolution creating the Haw River Sanitary District in Alamance County. Motion was seconded by Doctor Johnson, and carried unanimously. (Resolution filed in Minute Book.)

Secretary Reynolds presented to the Board for consideration the proposal that the State Board of Health participate in the Pediatric Seminar at Saluda to the extent of furnishing to not more than twenty-five physicians in general practice in North Carolina scholarships together with room and board, not to exceed \$55 for each physician; these men to be selected by the State Board of Health. The Secretary explained that expenses for this course would come from funds made available by the Children's Bureau or the U. S. Public Health Service, if possible. The Secretary read the resolutions adopted by the Maternal and Child Health Committee of the State Medical Society in Raleigh on February 16, 1940, endorsing this plan. (Resolutions filed in Minute Book.) Secretary Reynolds also read to the Board members a letter of February 16, 1940, from Dr. J. Buren Sidbury of Wilmington to Doctor Cooper in which Doctor Sidbury gave his reasons for disapproving the plan.

After a discussion by the Board of the methods for financing this participation and the various points for and against the adoption of the plan, including the role of Doctor Lesesne Smith in the Seminar, Dr. G. G. Dixon made a motion to disapprove the adoption of the Resolution endorsing the plan of participation for the State Board of Health. Motion was seconded by Doctor Rainey, and was unanimously passed.

Doctor Dixon made a motion that, provided funds are available, that Doctor Cooper establish in various sections of the state postgraduate clinics on

pediatrics similar to those conducted a few years ago. This motion was seconded by Doctor Johnson, and unanimously carried.

Dr. John H. Hamilton, Director of the Division of Laboratories, appeared before the Board and read a Resolution requesting the PWA for a second extension of time for the completion of the Building Program of the State Laboratory of Hygiene to February 28, 1940. (Resolution filed in Minute Book.) Doctor Dixon made a motion to adopt the Resolution requesting the PWA to extend the date of completion of Docket NC 1128F to February 28, 1940. The motion was seconded by Doctor Johnson, and carried unanimously.

Doctor Hamilton then presented to the Board a Resolution requesting a redistribution of the funds set aside for landscaping the Laboratory Building. Doctor Dixon offered a motion to adopt the Resolution. Motion seconded by Doctor Johnson, and carried unanimously. (Resolution filed in Minute Book.)

Doctor Hamilton then presented to the Board a Resolution of Acceptance of all the work provided on contracts numbered 1 to 23, Docket No. NC 1128F. On motion of Doctor Dixon, seconded by Doctor Johnson, the Resolution was unanimously adopted. (Resolution filed in Minute Book.)

The annual meeting of the State Board of Health was held in the Carolina Inn, Pinehurst, N. C., May 15, 1940, President Craig, presiding.

Dr. John H. Hamilton was present and introduced two resolutions to the Board relative to the PWA contracts under NC Docket 1128F. On motion of Doctor Dixon, seconded by Doctor Haywood, these resolutions were passed. (Resolutions filed in Minute Book.)

On motion of Mr. Fordham, seconded by Doctor Johnson, the following motion was unanimously passed: "that no laboratory be approved by the State Board of Health except one directly under the supervision of a doctor of medicine."

On motion of Doctor Dixon, seconded by Doctor Haywood, a resolution of the North Carolina State Board of Health naming time and place of a public hearing concerning the creation of the Catawba Heights (Gaston County) Sanitary District and ordering publication of notice thereof, was passed (Resolution filed in Minute Book.)

Policies governing the sanitation and hygiene of summer camps and their personnel were discussed, and on motion of Doctor Dixon, seconded by Doctor Johnson, were endorsed.

Dr. R. E. Fox submitted to the Board "Standards for the Establishment and Maintenance of a Merit System of Personnel Administration for the State Board of Health." After due deliberation, and on motion of Doctor Dixon, seconded by Mr. Fordham, the said standards were adopted.

INFORMATIONAL SERVICE REPORT

Through the office of the Informational Representative, news releases, feature articles and other information are given out for publication, each such article being sent to every newspaper in North Carolina, except in cases where the material was worked up at the special request of some individual newspaper or news-gatherer. Before any article is released for publication, it is carefully checked for accuracy and to eliminate any sensational or misleading features.

Through the generosity of the publishers of North Carolina, nearly a hundred papers are received through the office of the Informational Representative, at no cost to the State Board of Health, such papers being sent on a co-operative basis by the publishers who have given this publicity work their one hundred per cent coöperation, as evidenced by the fact that, between July 1, 1938, and June 30, 1940, clippings covered 312 pages in the large scrapbook which is being kept as a part of the permanent records of the State Board of Health in order that a daily history of this Board, as chronicled in the press, be available to those who, in future years, seek to learn something of present activities.

Since October 1, 1939, the Informational Representative has been responsible for the broadcasting activities of the State Board of Health. He supervises a program over Station WPTF at Raleigh each Tuesday from 5:45 to 6 P.M.

DIVISION OF PREVENTIVE MEDICINE

The personnel for the period was composed of one medical director, one assistant medical director, one state supervisor for Crippled Children's department, one assistant in the department of health education, one state supervisor or consultant nurse, two nutritionists, one senior stenographer-clerk, three junior stenographer-clerks, two senior mailing clerks and one junior mailing clerk to handle the mimeograph and multigraph machines, one maternal health league nurse, eight specially trained nurses who do field work in the department of school health supervision and the midwife control work, one junior accountant assigned to the budget department, and one clinical assistant assigned to the technicians at the Laboratory. In addition, the Division provided part of the salary for 62 nurses in 44 counties.

The work of this Division during the biennium covered the following activities: A department of school health supervision, health education, maternal and child health services, crippled children's service, and complete midwife control for unorganized counties. Another responsibility of this Division is the handling of medical correspondence, or the personal health service of the Board, issuing the monthly *Health Bulletin*, and, in addition, the Director is Assistant State Health Officer.

School Health Service

School health service was organized in 1918 by this Division and has functioned constantly up to this year. During the two-year period ending June 30, 1938, the nurses engaged in this work inspected the school children in 21 counties. In such counties as they work, these nurses visit every school for both races and inspect the children and record their findings on suitable cards which are made permanent records in the offices of the local health departments. They also lecture to the children grade by grade or in entire school groups. At the conclusion of the work, they present their findings to the local health officers in the counties in which they work. They assist such organizations as the P.T.A., and the parents, and the medical and dental professions in every way possible to get follow-up done. They call definite attention to parents of the presence of apparent physical defects in their children. They instruct teachers and the parents and the children in ordinary sanitary measures and impart information about the spread of communicable diseases.

During this two-year period they have inspected a total of 432 schools and 64,336 children. A more detailed report follows:

No. children found defective.....46,086
No. children having defects:

Hearing	649
Vision	5,829
Teeth	28,528
Throat	24,259
Breathing	11,676
Posture	7,674

Orthopedic	602
Skin	1,326
Other	12,681
No. children found to be immunized:	
Diphtheria	9,495
Smallpox	40,922
Typhoid Fever.....	7,370
No. children with tonsils removed.....	7,108
No. children 10 per cent or more under average weight.....	13,302
No children 20 per cent or more over average weight.....	1,493
No. schools with oiled floors.....	323
No. schools with individual drinking cups or bubbling fountains of approved type	253
No. schools with approved type of toilets for both sexes.....	347

Special School Health Service

At the beginning of the last year of this biennium a new unit of school health service was set up under the joint direction of the State Board of Health, the State Department of Public Instruction, aided by the International Health Board and the Rockefeller Foundation General Education Board. This work is under the active direction of a physician who has the title of Co-ordinator to direct this work under the joint supervision of the State Health Officer and the State Superintendent of Public Instruction. As a complete report of the Coördinator's work during this first year will be found elsewhere in this publication, no further mention need be made of that work here.

Hearing Conservation Program

Work with the audiometer which was commenced in a hearing conservation program in 1937 was continued during this biennium. During the last year of the period, one of the staff nurses used the machine in making the tests in Edgecombe, Greene and Randolph counties. This work was incorporated into the regular school health program and the regular generalized public health program of those three counties.

Nutrition Program

The nutritionist employed in the hearing conservation program retired from the service during this biennium and as stated above, one of the staff nurses assumed responsibility for the hearing conservation program. In place of the nutritionist who was retired because of defective hearing to such an extent which disqualified her for the work, another qualified nutritionist was employed and assigned to the school health coördinating unit. On the first of January 1940 a second qualified nutritionist was employed by this division and placed with the experimental work now being conducted under the direction of Dr. D. F. Milam with headquarters at Duke Medical School and the University of North Carolina. The work of both these nutritionists is incorporated in reports of other agencies appearing elsewhere in this report.

Personal Health Service

An important service of this Division is that rendered through personal correspondence. Thousands of people, many of whom are distressed in mind or body, write to the State Board of Health for information, help or advice on almost every conceivable question relating to health in the field of medicine. Naturally, not all such questions can be answered, but even then no letter or communication is disregarded and every writer signing his name and giving correct address gets a reply. The value of this friendly personal service to a large group of inquiring and anxious people is inestimable, and at the same time it is no little item in the regular day's work.

Health Education

Health Education as utilized by the State Board of Health comprises every available means of imparting information from one human to others. Naturally, the time-honored method is by the written and spoken word. Our health education work embraces regular and special publications, lectures, personal examination and advice to thousands of women in the maternity and infancy centers by physicians and nurses, house to house contact in such things as nurse demonstrations, and the provision of moving picture service.

No phase of public health work is more important than health education. Only as the rank and file of people know and understand the principles and methods of disease prevention will there be any great progress of a permanent nature made in saving lives, cutting down sickness, and making life easier and happier for all the people. Reaching the people who need health instruction most is our greatest problem. Large numbers, especially of the colored race, do not read and write, neither do they have radios. Nevertheless, we keep the channels that are open to us such as the press, radio, clinics, public health nurses, and the public schools, busy carrying the gospel of health to all people who will and can receive it. It has been said that if we could get to the people the knowledge which medical science has given us and get this knowledge converted into appropriate action, at least ten years would be added to the expectation of life of each newborn child.

The last two years have seen the educational health service of the Board increase in both volume and efficiency. *The Health Bulletin*, a monthly publication of sixteen pages, which is sent free on request to citizens of the state, continues to be the most important and effective means we have for reaching the people with health information. The publication is now in its 56th year. During the biennium the mailing list for this publication has increased from 46,000 to 55,000 copies. The editor, who is director of this division, endeavors to put into every issue some timely and understandable articles which may be of interest to every group of readers, lay and physician alike, and which over a period of twelve months, cover a great variety of health subjects. His editorials, "Notes and Comments," which are written out of many years' experience in public health work, are frequently copied by the press in and out of the state.

In addition to the 55,000 copies of the monthly *Health Bulletin*, this Division sent out during the last two years 8,004,805 copies of other free health literature. This consisted of forty or more different pamphlets and bulletins on such diseases as diphtheria, typhoid, hookworm, pellagra, cancer, and appendi-

citis. New books and pamphlets of this nature are prepared and issued as new health knowledge increases and the needs demand. Much very valuable educational matter goes out regularly in mimeographed form, particularly reports, press articles and material of a temporary nature. This service has increased from several thousand sheets monthly to several million. During this biennium a grand total of 9,192,455 pieces of literature have been mailed out through this division.

Maternal and Child Health Services

The work in this department during this biennium has been greatly enhanced through funds provided by the Children's Bureau under the Social Security law. From this source all of the nurses' service assigned to regular duties in counties as stated elsewhere in this report, in addition to several employees in the Division office headquarters, has been made possible through Children's Bureau funds. The fundamental part of the service, however, has been maintained for about twenty years and is no different from what it has been during these years, with the exception that with Children's Bureau funds the service has been expanded and extended in every direction.

The practical plan of establishing maternity and infancy centers with a responsible public health nurse in charge and with a practicing physician present to make the physical examinations of expectant mothers and of babies under one year of age has been thoroughly established. This work is not new, having been done in some counties in the state for many years. The group conferences years ago through which nurses assembled prenatal cases for instruction was well demonstrated but the provision of a practicing physician and, therefore, a thorough medical examination has been made possible through Children's Bureau funds. This service has been established in 55 counties on a more or less permanent basis.

During the biennium, 185 centers were operated and 250 physicians were present for the period and made the examinations of expectant mothers or babies under one year of age brought to these centers. The centers are open only to poor women who are dependent on midwife service for all their important medical needs incident to pregnancy and childbirth. They are open to the babies of the poor for advice from the nurses and physicians on infant feeding and the numerous things the mothers need to be advised on in the care of the baby.

In the two-year period, there was a total of 4,079 new white women patients, 19,144 new colored women patients and 364 new Indian women patients, making a total of 23,587 women. Most of these women supplied a specimen of blood which was sent to the State Laboratory of Hygiene for examination or were examined in the local laboratories for the presence of syphilis. A total of little more than 13 per cent of such examinations resulted in a report of the positive presence of syphilis in its active stages.

A large majority of the patients reporting the presence of toxemic conditions, of which there were more than 3,000 women, and of those suffering from syphilis were undergoing proper treatment before the termination of pregnancy.

In the Child Health Service division of the centers, there was a total of 16,226 white babies brought to the centers and a total of 30,850 Negro babies, together with 103 Indian babies, making a total of 47,179 given medical exami-

nations during the two-year period. About 15 per cent of the white babies were found to be suffering from malnutrition and about 20 per cent of Negro babies were suffering from food deficiencies. Four hundred and twenty-seven white women and 940 Negro women were sent to a hospital from the clinic service, and medical attendance at delivery was secured for 776 white, 1,976 Negro and 14 Indian women.

Infants referred for treatment:

Medical	3,006
Surgical	813
Dental	153
Ocular	130

More than 1,400 infants were vaccinated against smallpox and 11,789 were immunized against diphtheria.

In the postpartum service, 13,078 women reported a successful delivery of a healthy living baby. But 615 women reported stillbirths.

One of the most encouraging features of this work during the two-year period was that more than 16,000 visits to the clinics for examination was made by women before their fifth month of pregnancy. This division aided in the maternity and infancy service in the following counties: Anson, Beaufort, Bertie-Chowan, Bladen, Buncombe (City of Asheville), Cabarrus, Cleveland, Columbus, Craven, Cumberland, Currituck-Dare-Hyde-Tyrrell-Washington, Duplin, Durham, Edgecombe-Green, Forsyth-Stokes, Yadkin-Davie, Guilford (High Point and Greensboro), Halifax, Harnett, Haywood-Transylvania, Hertford, Johnston, Lenoir, Martin, Mecklenburg (City of Charlotte), Moore, Nash, Edgecombe-Nash (City of Rocky Mount), New Hanover, Northampton, Orange-Person-Chatham, Pitt, Richmond, Robeson, Rowan, Rutherford-Polk, Sampson, Stanly, Surry, Union, Vance, Wake, Wayne, Wilson.

The Division supplied free toxoid sufficient for the immunization of 58,000 babies (one dose each) during the two-year period. This was supplied to health officers and the physicians throughout the state and was sufficient to immunize against diphtheria more than a third of the babies born during the period.

During this biennium, exhaustive efforts were continued in all of the counties not having a whole time health officer and in a majority of the counties with organized health departments to see and examine every midwife at work in the state. It is probable that about 75 per cent of all the midwives at work were seen. A total of 229 midwife meetings were held, the attendance was anywhere from two to about forty, depending on the county and the area. In addition, more than one thousand home visits were made to midwives who did not attend the meetings. As a result of this work in the last year of the biennium, 921 midwives were given permits to work by the nurses in county health departments. The best estimate at present would be that there are about 3,000 or fewer midwives at work in the state with about 2,200 of them properly granted permission to work upon meeting the minimum qualifications required by the state.

Reports from the whole state coming to this Division from whole time health officers being aided by funds coming through this Division and otherwise, indicate that more than 50,000 women were examined in medical conferences for expectant mothers in the two-year period. Nearly 40,000 visits

were paid to such women after the birth of their babies and a total of nearly 110,000 nurse visits before and after the birth of the baby to women receiving this service.

Especial attention has been made toward stressing the importance of pre-school examinations for children expected to enter school the following season. During this period nearly 65,000 children were given medical examinations and an additional 25,000 were examined by nurses. No estimate is here made of the many thousands of children receiving medical, surgical and dental treatment for the corrections of defects found in such examinations.

A complete system of mailing literature and supplies in the field of Maternal and Child Health has been organized and maintained by this Division. A sufficient number of clerical helpers devote their time to this work. During the biennium a total of 69,591 letters giving information to expectant mothers have been mailed out. These letters are sent directly to the mothers only at the request of the mother herself, the midwife or the physician, or some intimate friend. An excellent book known as Prenatal Care was sent to 52,362 expectant mothers. Thousands of pieces of special literature such as Daily Time Cards and Diet Lists giving instructions for feeding babies and information on special subjects such as infantile diarrhea, etc., were sent out. Another excellent book known as Infant Care was sent to 38,654 families having infants who requested this literature. In compliance with the state law requiring the Board of Health to supply silver nitrate prophylactic drops to physicians, hospitals, and midwives on request, a total of 25,776 packages were sent out. Each package had sufficient prophylactic drops for use in the eyes of six newborn babies.

General Summary

The principal emphasis in this Division for the past two years has been on educational work and the maternal and child health service. The demands on the director of the Division in coördinating, extending and systematizing the maternal and infant centers and the work as editor of the *Health Bulletin*, demanding a great deal of concentrative mental effort, together with extension of information about health education throughout the state, has pressed heavily on the time and energies of the director. The year 1939 and the first half of the year 1940 has seen the almost constant reduction in the infant and maternal death rates in the state. This cannot be a mere coincidence but is a result of years of hard work and planning which has secured the co-operation of many agencies in the medical profession and stimulated the work of local health departments in the state. Preparations have been made to extend the work of visual education along lines not heretofore undertaken. Every effort has been made during this biennium to enlist the activities of every local health department in this field of work and to extend it to counties not now much interested or having no health department in due time so that the whole state will be properly covered.

CRIPPLED CHILDREN'S DEPARTMENT

The Crippled Children's Department, Division of Preventive Medicine, of the State Board of Health, concluded the second biennium of operation of the crippled children plan of service as of June 30, 1940. The Plan, representing the third cycle of progress in the state in providing care for crippled children, was inaugurated in April, 1936, in conjunction with provisions of the Federal Social Security Act in extending grants-in-aid to the states, through the U. S. Children's Bureau, for the purpose of expanding and extending state programs for crippled children. Theretofore, the State of North Carolina had shown two cycles of progress; first in establishing the N. C. Orthopaedic Hospital, Gastonia, N. C., which opened for service in 1921; and second in providing a series of orthopaedic clinics organized at various times and centers beginning in the latter part of 1925 which provided limited services to all races and all age levels of cripples. Passage of the Social Security Act in 1935 and subsequent grants-in-aid to the state by the Federal Agency made possible the establishment of a division in the State Board of Health to co-ordinate and extend the program of services for crippled children in the state.

The essential features of the North Carolina Plan of Services for Crippled Children have been sustained during the biennium without change. The objectives of the State Agency for coördinating and extending services, set forth in April, 1936, when the program was established, have proved to be sufficiently broad as to formulate the basis of an adequate program yet to be fully realized, but attended with considerable success. The fullness of an adequate program has not been possible because of the limitations of personnel to carry it out and the need for increased budgetary provision to purchase services available as compared to the existing need. The results have been that the demand for services for children of indigent families has consistently been in excess of the financial resources to meet the need. The Agency takes pride in the educational results of its activities carried out in conformity with the original objectives of: (1) locating all crippled individuals under 21 years of age and registering these with the State Agency; (2) providing expert and specialized diagnostic services for the purposes of classification of disabling affections and formulation of individual plan of treatment to restore function to as normal a state as possible; (3) providing adequate care under which treatment is carried out at the State Orthopaedic Hospital, in selected general hospitals, in approved convalescent homes, and in approved foster-homes; (4) following the children admitted to the register and to the services through a field follow-up system conducted by workers specialized in the care of crippled children through the diagnostic clinics, in the home and through the personnel of local public health and public welfare agencies, and; (5) by engendering a fuller public lay interest in the problem of the cripple by promotion of educational programs, talks, news articles and radio programs.

Since the State Agency here reports upon the results of a coördinating activity, it seems pertinent to comment upon aspects of crippled children services conducted by related agencies, which in instances are component parts of the State Plan. However, statistical information of these services will be

excluded from tables included in this report. Notable for the extent and quality of its services is the North Carolina Orthopaedic Hospital at Gastonia, N. C., where the state provides for crippled children of all races and for age levels under 16 years. The Hospital has fully coöperated with the State Agency in providing care to children during the biennium and the Board of Trustees has agreed that its appropriations may be used as a source of state funds for use in matching Federal grants. The institution operates with a capacity of 160 beds (50 beds devoted to Negroes) and experienced a turnover of approximately 1,000 in-patients during the biennium*—operating to full capacity throughout the period with an accumulating list of applicants whose admissions were deferred.

The State Agency has practiced a selection of types of affections requiring unusual specialized facilities, oversight, and prolonged care for referral to the Hospital to assure the best control of the patient under treatment, because these essentials cannot be fully realized for the more difficult types if they are referred to general hospitals. This does not mean that only the difficult types and long-duration-of-care cases are acceptable for care at the Orthopaedic Hospital, nor, conversely, that only short-term and less difficult cases are referred to the selected general hospitals, because there are many factors affecting both types of patient and institutions which make such restrictions impractical and undesirable. In addition to its in-patient facilities and services, the Orthopaedic Hospital conducts two out-patient clinics—weekly at the Hospital and monthly at Goldsboro, N. C.—to which patients are admitted for diagnosis, treatment, pre-surgical and post-surgical follow-up. During the biennium the Hospital opened a new isolation ward obviating better control and increasing the extent of intake and turnover of patient load. It also initiated a graded school system for children of teachable age levels connected with the hospital and local school system and conducted within the hospital. Adequate staff and facilities are now for the first time available and make possible the provision of a standard public school curricular for crippled children at the Hospital.

The North Carolina League for Crippled Children, another coöperating enterprise, has well represented activity among the laity and continued to make progress during the biennium. The services and objectives of the League have greatly broadened within the period and the League has fully co-operated with the State Agency. It is to be congratulated upon bringing to Asheville the Convention of the National Society in the fall of 1940.

Under a progressive leadership at Asheville a convalescing institution for crippled children has been developed providing a high standard of convalescent care exclusively for crippled children. The institution incorporated as a non-profit organization is entitled the Asheville Orthopaedic Home. The Home has a capacity of 20 children (beds) and was developed under the guidance of the licensing powers of the State Board of Public Welfare, Division of Child Welfare, and after frequent consultation of officials of the Crippled Children's Department in the State Board of Health as to special standards for the care of crippled children. Services are purchased from the Home by the State Agency for indigent children for whom this type of care is medically indicated. At intervals the Home has provided free care independent

* See Biennial Report N. C. Orthopaedic Hospital 1938-1940.

of the State Agency. It may be predicted that this institution will improve, extend and expand its services inasmuch as it has experienced less than one year of operation at the close of this biennium.

There has been a large contribution to the State Plan in the activities of the County Health and County Welfare Departments throughout the state. Efforts toward the coördination of these to the services of the State Agency and to the needs of crippled children have become increasingly effective. Aspects of local medical care, home care and sustenance, professional and related oversight and transportation have largely been met through the co-operation of these forces in the community.

The activities of the State Agency are set forth primarily in sequence in the following subsections and tables:

Registration

As of June 30, there were 16,493 crippled children on the register. This number represents an increase of approximately 16 per cent over the number on the register at the beginning of the biennium. It should be stated that the register is not static, as approximately 6 per cent of the total children on the register during the biennium were removed for divers reasons, principally due to attainment of age over the limit of that maintained by the register. Two interesting analyses have been made of the children on the register during the biennium. Table I indicates an analysis as of June 30, 1938 (beginning of the biennium), by sex, race and age. Table II indicates an analysis by diagnostic classification and age made as of December 31, 1939.

TABLE I
Special Report on Sex, Race, Age, and Diagnosis
 Crippled Children on State Register, June 30, 1938

A. Number of children, according to sex and diagnosis

Sex	Total (First Line Must Agree With Item 5 of CC-52)	Orthopedic or Plastic Conditions	Other Crippling Conditions	No Diagnosis Made by Licensed Physician
(1)	(2)	(3)	(4)	(5)
Total	14,265	13,535	545	185
Boys	7,982	7,620	269	93
Girls	6,247	5,886	274	87
Sex Unknown	36	29	2	5

B. Number of children, according to race and diagnosis

Race	Total (First Line Must Agree with Item 5 of CC-52)	Orthopedic or Plastic Conditions	Other Crippling Conditions	No Diagnosis Made by Licensed Physician
Total	14,265	13,535	545	185
White	11,541	10,971	437	133
Negro	2,311	2,205	85	21
Other	123	112	10	1
Race Unknown	290	247	13	30

C. Number of children, according to age and diagnosis

Age Group	Total (First Line Must Agree with Item 5 of CC-52)	Orthopedic or Plastic Conditions	Other Crippling Conditions	No Diagnosis Made by Licensed Physician
Total	14,265	13,535	545	185
Under 1 Year	75	74	1	0
1 Year, Under 5	1,337	1,253	72	12
5 Years, Under 10	2,719	2,572	113	34
10 Years, Under 15	3,979	3,796	150	33
15 Years, Under 20	3,989	3,783	155	51
20 Years, Under 21	1,744	1,678	46	20
Age Unknown	422	379	8	35

TABLE II
Special Report on Age and Diagnosis of Crippled Children on
State Registers, December 31, 1939

NUMBER OF CHILDREN BY AGE AND DIAGNOSIS

Diagnosis Classification	Age in Years							Un- known
	Total	Under 1	1-4	5-9	10-14	15-19	20	
Total.....	15,343	133	1,767	3,249	4,653	4,578	716	247
1. Poliomyelitis.....	1,783	2	122	375	648	515	111	10
2. Cerebral Palsy.....	1,945	2	312	543	502	483	73	30
3. Paralysis Due to Birth Injury (Exclusive of Cerebral Palsy).....	215	9	37	63	55	39	7	5
4. Clubfoot.....	1,079	54	224	286	250	218	32	15
5. Harelip and/or Cleft Palate.....	191	7	60	41	53	26	2	2
6. Tuberculosis of Bones and Joints.....	418	0	17	80	114	170	31	6
7. Osteomyelitis.....	960	0	27	136	316	386	78	17
8. Scoliosis.....	295	1	4	24	97	141	25	3
9. Rickets.....	462	5	126	115	149	54	7	6
10. Burns.....	397	0	37	114	134	100	11	1
11. All Other Known Definite Diag- noses.....	7,077	46	712	1,356	2,201	2,320	322	120
12. Provisional Diagnoses.....	521	7	89	116	134	126	17	32

State Clinics

Patients admitted to the clinics operated exclusively by the State Agency increased in number for the period by about four per cent, while new cases referred to the clinics represented approximately 20 per cent of admissions—indicative of the continued effectiveness of locating services. Table III shows the activities of the clinics:

TABLE III

1. Number clinics held	429
2. Number new cases admitted to clinics.....	6,554
3. Number of old cases reexamined.....	6,550
4. Number patients attending clinics (Total).....	13,104
5. Number of cast procedures.....	1,504
6. Number of brace procedures.....	508
7. Number dressings	1,218
8. Number of bandage procedures.....	319
9. Number of corrective shoes.....	1,063
10. Number corrective exercises.....	825
11. Number of dietetic treatments.....	731

Major Services

Hospital care and treatment, convalescent care, foster home care, and appliances purchased represent the "major services" provided exclusively by the State Agency. There was an increase in the number of children provided with hospital care during the period and a convalescent care program was inaugu-

rated. Table IV shows the major services provided to children through finances of the State Agency.

TABLE IV

A. HOSPITAL CARE AUTHORIZED

1. Number of children authorized for general hospital care, unadmitted as of July 1, 1938.....	146
2. Number of children authorized for general hospital care, admitted and under care July 1, 1938.....	26
3. Number of children authorized for general hospital care during biennium	1,750
4. Total number of children authorized for general hospital care during biennium.....	1,922
5. Number of children having authorized care in general hospital extended prior to discharge.....	668
6. Number of children for whom authorized general hospital care was cancelled during biennium.....	130
7. Number children authorized for general hospital care and unadmitted 6-30-40	184
8. Applications for general hospital care received and deferred as of 6-30-40	56
9. Applications for general hospital care outstanding as of 6-30-40.....	178

B. HOSPITAL CARE RENDERED

1. Number of children under care general hospitals 7-1-38.....	26
2. Number of children admitted to general hospitals.....	1,582
3. Total number of children under care general hospitals.....	1,608
4. Number of children discharged from care general hospitals.....	1,495
5. Number of days general hospital care rendered during biennium.....	38,171

C. CONVALESCENT AND FOSTER HOME CARE

1. Number of children admitted to convalescent or foster home care....	83
2. Number of days convalescent or foster home care rendered.....	5,155

D. APPLIANCES

1. Number of appliances purchased.....	188
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Minor Services

Field and office activities of the staff of the State Agency constitute the "minor services" rendered to crippled children during the biennium. This type of service was not provided prior to the establishment of the State Agency in 1936. It is now regarded as equally essential to the maintenance of a well rounded and efficient program for crippled children. While the field staff was increased only by one specialized worker, the extent and effectiveness of follow-up activities increased during the period. This type of service has demonstrated its value beyond expectations and warrants expansion to more nearly meet the needs of children in respect to early detection, follow-up, oversight and supervision for which the State Agency is singularly responsible. No other agency, public or private, is responsible for a field service. Table V indicates the progress and accomplishments in this line of endeavor.

TABLE V

1. OFFICE

a. Number of staff conferences.....	52
b. Number of conferences with surgeons.....	664
c. Number of conferences with health officials.....	922

d. Number conferences with welfare officials.....	848
e. Number of conferences with official bodies.....	9
f. Number of conferences with non-official bodies.....	8
g. Number of conferences with others.....	962
h. Number educational talks	37
i. Number persons in attendance at talks*.....	1,015
2. CLINIC	
a. Number of clinic sessions attended by field workers.....	581
b. Number of service contacts with patients at clinics.....	22,027
c. Number of services or instructions to patients at clinics.....	5,320
3. FIELD	
a. Number of investigating visits.....	1,270
b. Number of new cases located by field workers.....	378
c. Number of home visits to new cases.....	606
d. Number of home visits to old cases.....	3,771
e. Number of new cases referred to clinic or surgeon.....	545
f. Number of old cases referred to clinic or surgeon.....	2,829
g. Number of not-home visits made to patients.....	310
h. Number appliances adjusted on visits to home.....	98
i. Number of exercises given or instructed in the home.....	424
j. Number of therapies given or instructed in the home.....	192
k. Number of cases referred to Vocational Rehabilitation.....	2,590

The period covered by this report represents the second biennium in which the coördinated plan has been in operation. As another similar period of activity is undertaken it appears that the original features of the plan were wise and, above all, workable. In all quarters, be it professional or lay, public or private, the effectiveness and success of the program is recognized. Particularly have the children, their parents and friends, shown gratitude for the beneficence of the State and National governments and to the leadership and citizenship which have made the program possible. We of the State Agency are grateful, too, and although need for expansion, improved facilities, and increased financial resources are indicated for a fuller realization of need services, we are determined to go forward in the march of progress and in demonstrating that even a crippled child may find his place in a Democratic Society.

* Exclusive of radio talks.

DIVISION OF SANITARY ENGINEERING

This biennium has been characterized by marked improvements in the state in the sanitary and public health engineering fields. In spite of inadequate funds to carry on the work and the loss of valuable, trained, and experienced personnel, the Division of Sanitary Engineering has made every effort to take maximum advantage of Federal funds available for the continuation of Community Sanitation, Malaria Control Drainage, and the construction and extension of water and sewerage, swimming pool, and incineration projects by municipalities and sanitary districts.

Water Works and Sewerage

The Division of Sanitary Engineering has but three Assistant Field Engineers and one Principal Assistant Engineer who devote practically all of their time to water works and sewerage problems. While the program as outlined by statute is followed, the Division has felt that one of the greatest services it could render to the public health is to secure the construction of new water and sewerage systems as well as extensions to existing systems through Federal grants from the PWA and WPA. Through the PWA, aid to the extent of 45 per cent of the cost of the projects was obtainable. Through the WPA, entire water and sewerage systems are now being installed in small villages, towns, and sanitary districts at a cost to the sponsor of sometimes as low as 40c on the dollar. Extensions to water and sewer lines are being made at a cost to municipalities of from 25c to 35c on the dollar. The Reconstruction Finance Corporation has been of great service in purchasing bonds at four per cent interest. A study of 27 municipal water and sewerage projects that have been constructed with Federal aid since 1933 reveals that over a third are self-liquidating while none of them to date has had to assess more than 50c on the \$100 valuation for water and sewerage purposes.

The noteworthy water purification plants constructed during the biennium are those at Charlotte, Greensboro, and Raleigh. Among the outstanding sewage treatment plants are those constructed at Greensboro, Wilson, and Statesville. Complete water and sewerage systems were constructed during the biennium at the following towns:

Bessemer Sanitary District	Pikeville
Bladenboro	Princeton
Colerain	Rich Square
Creedmoor	Rockwell
Denton	Rose Hill
Drexel	Rural Hall Sanitary District
Fair Bluff	Sparta
Halifax	Stoneville
Kenly	Winterville
Oakboro	Winton
Pembroke	

Largely through the educational and promotional work of this Division, 90 PWA allotments were made for water works projects in North Carolina according to a recent PWA report. In the number of projects receiving allotments for water works purposes, North Carolina was exceeded by only five states. It is roughly estimated that water and sewerage projects worth \$12,400,000 were constructed by the PWA in North Carolina. In the number of new sewage treatment plants installed North Carolina constructed 18 which, according to a PWA report, was exceeded by only two other states, Texas with 35, and Arkansas with 19.

With the small force available for supervision of public water supplies and sewerage systems, it has been impossible to render the service to municipalities that they expect and should rightly have. However, the Division has been able to do much more with public systems than with residential water and sewerage facilities. Bulletins and leaflets have been published showing standards of design and construction. The Farm Security Administration has undertaken a small amount of work, and the local health departments have been busy. It is felt that additional developments in this field are seriously handicapped by reason of lack of men and funds to carry on this work.

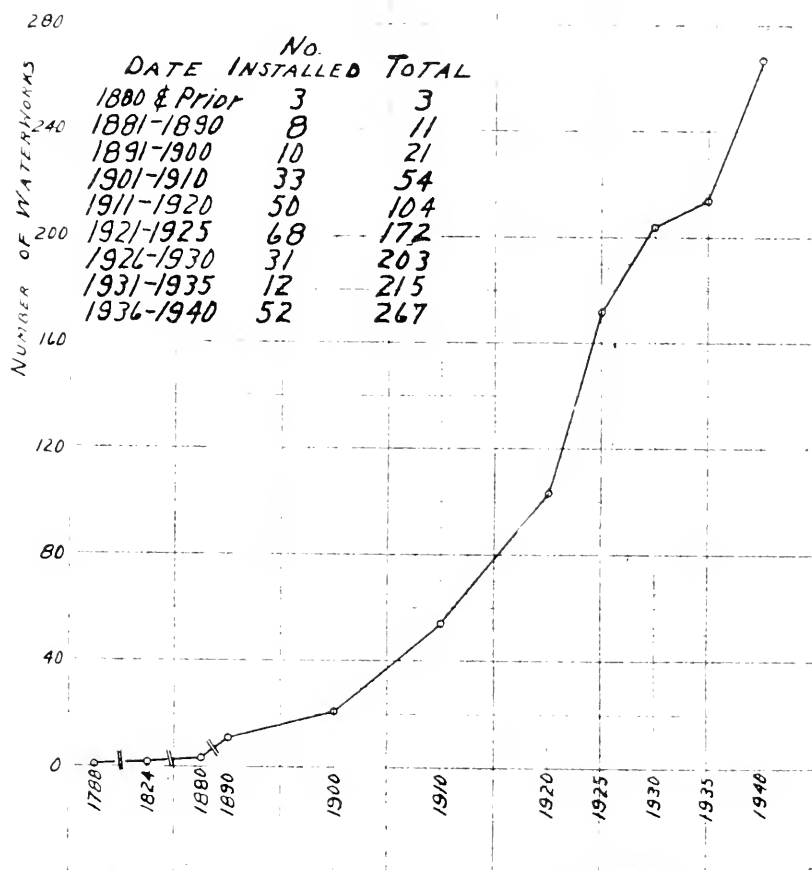
The real significance of North Carolina's achievement in construction of PWA and WPA sanitary projects should be viewed in the light of her rank in other matters. According to the University News Letter, the following economic indices tend to show North Carolina's place among the states in the Union:

<i>Economic Index</i>	<i>N.C.'s Rank</i>
Percentage of all families owning their own homes (1930).....	37th
Volume of retail sales per capita (1935).....	44th
No. of individual income tax returns per 1,000 persons (1935).....	44th
No. of passenger automobiles registered per 100 families (1936).....	40th
No. of radios per 100 families (1938).....	41st
No. of residential telephones per 100 families (1935).....	43rd
No. of domestic electric meters per 100 families (1930).....	41st
Circulation of 12 national magazines per 100 families (1937).....	40th
Value of farm land and buildings (1935).....	41st
Total bank resources per capita (1938).....	43rd
General hospital facilities (beds per 1,000 population).....	43rd
The average rank of the above is 41.5	

In this connection, it should be noted that North Carolina has 1.42 per cent of the national wealth, and 2.57 per cent of the population of the nation. In view of the tremendous public health value of public water supplies and water carried sewage, it is planned to continue the present program of education and encouragement to unsewered communities. It is recognized, however, that as more and more public water and sewerage systems are constructed, the duties and responsibilities of this Division, with its limited appropriation, will increase.

While North Carolina may hold a rank of 41st or 42nd among the states from an economic standpoint, it is interesting to note that she ranks well above that place in the recent construction of water and sewer improvements.

320 *NUMBER OF PUBLIC WATER SYSTEMS
INSTALLED BY YEARS IN
NORTH CAROLINA*



In number of PWA water works projects North Carolina ranks.....	6th
In value of PWA water works projects constructed, dollars.....	13th
In number of new PWA sewage treatment plants constructed.....	3rd
In number of remodeled PWA sewage treatment plants constructed.....	19th

Effectiveness of Promotional Work of the Division of Sanitary Engineering

From data on "Water and Sewer Systems Constructed on WPA Projects, Cumulative through December 31, 1939." Obtained from Works Projects Administration, Washington, D. C.

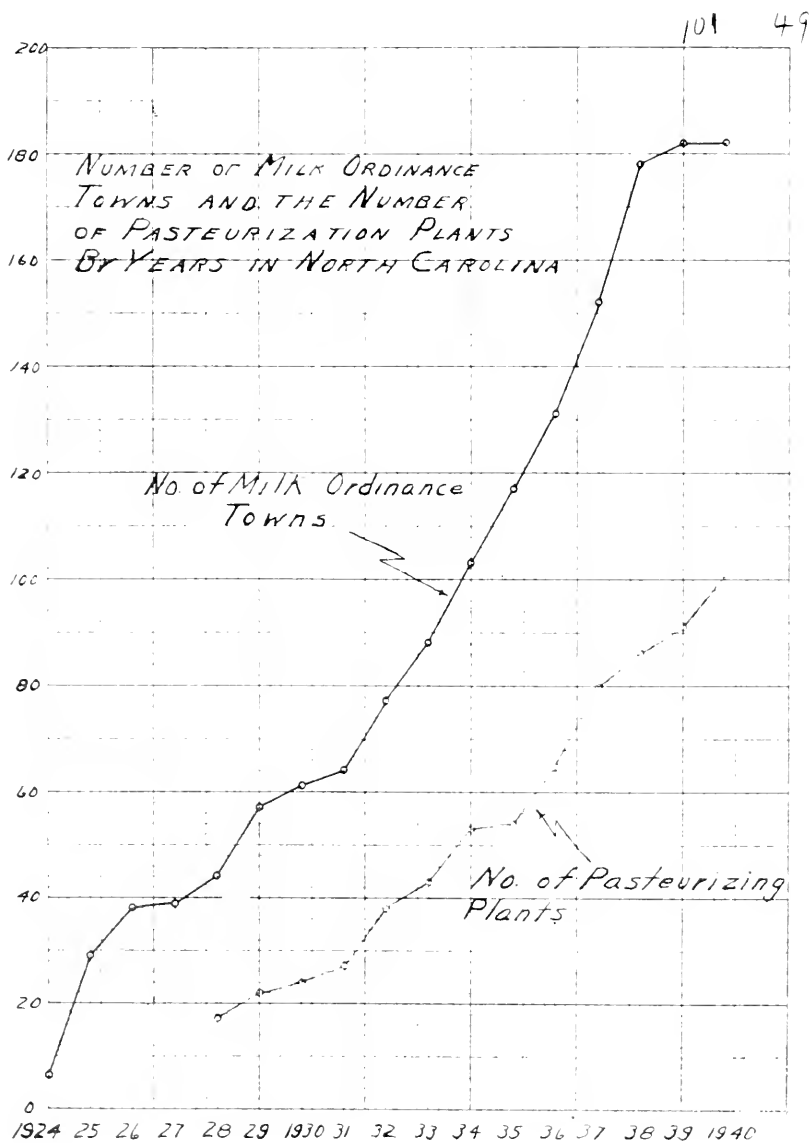
	Total WPA Projects in United States to Dec. 31, 1939	On basis of urban popu- lation N.C.'s share of the total number of Projects would have been*	Actual No. of WPA projects in N. C. to Dec. 31, 1939	N.C. received the following of her share according to urban population Per Cent
Sewage treatment plants	551	6.45	26	403
Water treatment plants..	125	1.46	6	411
Water mains laid (miles)	9,618	113	204	180
Water consumer connec- tions	240,792	2,820	3,040	108
Number of wells.....	3,188	37	57	154
Storm and sanitary sewer laid (miles)..	15,449	181	380	210
Sewer service connec- tions	384,493	4,500	4,658	104
				224% average

Through the aid of the WPA it will be seen, from the above table, that North Carolina constructed to December 31, 1939 a total of 26 sewage treatment plants, which is 403 per cent of her share based on urban population. During the same period North Carolina also built 210 per cent of her share of sewer lines. The average share, as indicated by the above table, received by North Carolina for water works and sewerage facilities, built by the WPA, was 224 per cent of that which might be expected according to the urban population. It is felt that this is in considerable measure due to the activities of this Division.

In extending and improving the activities in connection with public water and sewerage systems, the Division should adequately supervise the operation of all existing water and sewage treatment plants, in order to safeguard the public health. It should also attempt to abolish all privies, private water supplies, and cross connections within incorporated municipalities, and to provide 100 per cent of the homes in such municipalities with a safe public water supply, and with water-carried sewage. Similarly, every public school, summer camp, and roadside, or other establishment, catering to the public, should have a safe water supply, and a satisfactory sewerage system.

Information from the last school survey made in North Carolina indicates that 1,280 schools, with an enrollment of 596,000 pupils, have water-carried sewage, and 2,838 schools, with an enrollment of 284,282 still use privies; 120

* Note: The urban population of North Carolina is 1.17 per cent of the urban population of the United States.



schools, with an enrollment of 4,236, do not even have privies. It is the hope of this Division that all public schools will soon have safe water supplies, under pressure, and modern water-carried sewerage systems. This is particularly important because of the educational value of such facilities in promoting general sanitation and public health. However, a great deal more can be done with added personnel.

Milk Sanitation

There are now many urgent calls for the assistance of this Division from county health units, plant owners, and dairymen for the design and redesign of milk houses, dairy barns, and pasteurization plants. It has been necessary to defer action indefinitely on many of these requests because the engineer in charge of milk sanitation work has secured a position with the U. S. Public Health Service at an increase in salary. It has been impossible to secure the services of an engineer, trained in milk sanitation work, competent to take Mr. Andrews' place at the salary allowed.

Work on milk sanitation had to be deferred, or was made less effective, because the District Sanitarians were called upon to do promotional work in connection with the intensive campaign for water works and sewerage systems, and extensions. It should also be recognized that the District Sanitarians have had to spend a great deal of time on the sanitation of meat markets and abattoirs, as prescribed by law, notwithstanding the fact that neither the 1937 nor the 1939 Legislature made any appropriation for this work.

North Carolina now has 182 towns operating under the U. S. Public Health Service Milk Ordinance, as compared with 169 in 1938. Of this number there are at present 36 towns having milk ratings of 90 per cent or more as compared with 48 in 1938.

There has been an increase in the number of towns, cities, and communities which are operating under the Public Health Service Milk Ordinance, but there has been a decrease in the number of towns attaining a rating of 90 per cent or more. If additional personnel to carry out the milk sanitation program were employed, it would be possible to promote milk ordinances in many towns and cities that have not as yet attempted sanitary control of the milk supplies. If additional time could be spent on the milk sheds, that are now operating, but have poor ratings from a sanitary viewpoint, it would be possible to increase the effectiveness of the milk control program in these communities materially.

Securing a place on the honor roll is in no wise an end in itself. It is, at best, only a yardstick and a means of stimulating interest among health workers. The mere fact that a milk shed is on the 90 per cent list should be considered the attainment of only the first real objective in securing a clean, safe milk supply. Thereafter, the degree of compliance should be as nearly 100 per cent as possible in order to remove from milk any possibility of suspicion that it may, in any way, contribute to our high infant mortality, or our still higher death rate from diarrhea and enteritis.

The object of the present milk program is first: to improve the sanitation of milk production, second: to increase the percentage of market milk pasteurized, and third, to increase the consumption of milk to improve the general health.

During the biennium pasteurization was started for the first time in 24 plants. Nine plants were remodeled, and at the present time 3 more are under construction. The number of pasteurization plants has increased to 108 at the end of this biennium.

If North Carolina is to continue to lead the nation in its milk sanitation program, it will be necessary to provide additional funds with which to employ more Sanitarians and Engineers to carry on this important work.

Malaria Control Drainage Program

During the past two years the malaria control drainage program has been carried on with Federal funds through the Works Progress Administration. This program was planned and supervised by trained personnel, under the direction of the State Board of Health and the U. S. Public Health Service. Under this program, projects were worked in 32 malarious counties in the state. For the two year period a total of 488 miles of canals and ditches have been constructed and 220 miles of existing ditches cleaned. This work drained 2,814 acres of mosquito-breeding ponds and swamps; 3.4 acres of ponds were eliminated by filling. To accomplish this work, an average of 1,156 men, 7 dredges, and 23 trucks were used per month. Over one-half million persons have been benefited by the malaria control drainage program and for the past two years 29.73 per cent of the total cost of the work has been borne by the people affected.

Of the total amount of new ditches constructed, 115 miles consisted of major canals dug with heavy dredging machinery, which provided drainage outlets for large swamps that could not be drained by hand labor. Total cost of such operations was far too expensive for the landowners to handle without aid. Already, splendid results have been obtained on many of these major drainage projects.

The supervisory personnel for six months of the year 1938-39 consisted of one Assistant State Director and three District Supervisors. On March 31, 1939 this number was reduced to two District Supervisors. Salaries and travel of these men have been paid from U. S. Public Health Service, State Board of Health, and Work Projects Administration funds. The reduction in supervisory personnel necessarily meant a reduction in malaria control activities in the state.

The following figures give a breakdown of the amount of money spent during the past two years:

		per cent
Spent by WPA.....	\$ 832,741.20	68.42
Spent by Sponsors	361,864.18	29.73
Spent for Technical Supervision	22,557.71	1.85
	<hr/>	<hr/>
	\$1,217,163.09	100

The sponsors of malaria control drainage projects are required to furnish complete plans and profiles of proposed projects. Also, the landowners involved are required to sign right-of-way easements and maintenance contracts. The work is planned, laid out, and supervised by engineers who have been trained for this particular type of work and who give their entire time to it. Plans for future projects are being made to concentrate control work in

areas which have been found, from blood slide surveys, to be endemic malaria foci.

The program in North Carolina is planned and supervised under the direction of the State Board of Health and the U. S. Public Health Service, and is an integral part of a long time planning program for the eradication of malaria from the Southeastern United States.

Community Sanitation

Coöperating with the Work Projects Administration and the U. S. Public Health Service, which have provided part of the funds for technical supervision, there have been built in North Carolina during the past biennium 58,864 sanitary pit privies.

During the previous biennium there were constructed a total of 63,434 sanitary privies. This work has been carried on under the State privy law, through the coöperation of the WPA. The property owner is required to furnish only the material, while the WPA provides free labor for the construction.

A constant effort has been made to improve the quality and durability of these structures. In this connection, it is interesting to note that of the 58,864 units constructed 57,962, or 98.5 per cent, were of the concrete slab and riser type. At the beginning of this biennium 75.1 per cent of the privies constructed were painted. At present 58,383, or 99.2 per cent were painted. In September, 1938 the building of wood privies was discontinued and in February 1939 all privies constructed were painted.

The total labor cost for these 58,864 privies was \$927,707.42, or \$15.52 per unit. The total material cost was \$931,457.12, or \$15.59 per unit. The total cost of labor and materials for this work during the biennium was \$1,859,164.54, or \$31.11 per unit. This work involved a total of 2,526,156, or 42.27 man hours per unit. An average of approximately 971 WPA workers per week on these projects were under the general supervision of this program. These projects operated a total of 5,213 project weeks.

It is estimated that at least 250,000 families in North Carolina are still without running water and water carried sewage, and for these families this work is an important sanitary advance.

Housing Control

This Board has no housing control authority, except in connection with the Privy Law, which provides that no residence located within 300 yards of another residence may be used unless it has a satisfactory means of excreta disposal. There is no requirement, however, that a place of habitation must be provided with a water supply.

The Farm Security Administration in about 50 low income farm homes in each of 35 counties is providing approved privies, improvements to the water supplies, and screening all doors and windows.

An encouraging beginning has been made in slum clearance and low rental projects through Federal Housing authorities in a few of our large cities. Many thousands of rural homes in North Carolina still do not have even privies. Largely as a result of this condition, hookworm disease, on which such stress was laid a quarter of a century ago, has been reduced only about

two-thirds to three-fourths since 1914. It is a definite plan of this Division to prosecute such sanitary work until every rural home is provided with at least a pit privy.

The extension of rural electrification is of great assistance in encouraging the installation of running water and residential sewage disposal plants in rural homes, and full electrical equipment in dairies.

Plumbing Control

There is no state-wide plumbing control. In 1933 a North Carolina Building Code Council was created by the Legislature and a Building Code, including a Plumbing Code, written in part by this office, was adopted. Unfortunately, no machinery has ever been provided for enforcement of these codes.

Well Drilling

In this state, there is no licensing or supervision of well drilling. A comprehensive plan should be provided to protect the public from dangerously located and constructed wells, both private and public, and some means of obtaining data regarding ground water sources, well yield, and formations penetrated.

Rodent Control

One of the Engineers from this Division took a training course in Rodent Control a few years ago, and along with others has been assisting in educational work, and rat-baiting programs. On April 1, 1940, another of the Engineers from this Division was taken over by the Division of Epidemiology to do Rodent Control work, because that Division had funds with which to carry on such work, and could meet in part the salary increase offered by another State Board of Health. The Division of Sanitary Engineering did not have sufficient funds with which to keep this Engineer.

Garbage Collection and Disposal

This Division has at all times encouraged the use of improved methods of garbage collection and disposal, particularly the construction of incinerators. Many requests have come in for plans for small incinerators. Unfortunately, engineers have not been available to develop a series of plans for small incinerators as was done in the case of small sewage treatment plants for schools, dairy barns, milk houses, and pasteurization plants. As with sewage treatment plants, it is very difficult to get small municipalities or institutions to secure the services of an architect or engineer to design an incinerator. A study of this problem and some work on small stock plans would undoubtedly result in the construction of a number of incinerators, and better control of rodents.

Shellfish Sanitation

Shellfish sanitation in this state has been extended to include not only oysters, but also crabmeat, and to some extent the handling and canning of herring roe. This work is carried out by one of the Assistant Engineers, who also devotes a portion of his time to other matters of sanitation. This work is conducted under the sponsorship and with the full cooperation of the North Carolina Fisheries Commission.

Supervision of Hotels, Cafes, Lodging Houses, Tourist Homes, Etc.

The State Board of Health has statutory authority over the sanitation of hotels and cafes. This work is done by District State Sanitarians in the counties without local health units, and also in those counties where the local health personnel is incapable or unwilling to do this work. In the other counties, the District State Sanitarians supervise the local Sanitarians in this work.

The objective is to raise the standards of sanitation in such places, but on account of the nature of the establishments, with ever-changing help, the practical obtainable degree of sanitation is a relative matter, depending largely upon the frequency of visits or inspections, and upon the tact, ability, persistence, and personality of the Sanitarians in charge.

By reason of limited means and lack of personnel, it has not been possible to render satisfactory inspectional service to summer camps, Y.M.C.A. camps, institutions, and similar establishments. This has been particularly true during the past five years, during which time inspection of such camps has been practically abandoned. However, it is hoped that such work can be started, especially since the State Board of Health has now passed rules and regulations concerning summer camps.

One of the greatest needs in cafe and hotel sanitation is to find an adequate method of dishwashing and bactericidal treatment of dishes and utensils, especially methods which will produce satisfactory results even in very small establishments.

Stream Pollution

This Division has been able to do only a negligible amount of stream pollution work during the past ten years. Prior to 1931 certain very valuable work was carried on along a few streams, but with the coming of the depression, this work was laid aside.

Stream pollution work is needed along the Tar River from Oxford to Greenville, along the Neuse River from Smithfield to Hillsboro, on Sugar Creek south of Charlotte, along Grant's Creek, Pigeon River, French Broad, Roanoke, and elsewhere. Although this work is badly needed, it is expensive, and must await the time when more funds are available. At the present time the handling of textile mill wastes is a particularly difficult problem. The construction of large pulp mills in the State, with their serious pollution problems, also indicates the necessity of studies in the treatment of industrial wastes.

General Discussion

The Division of Sanitary Engineering is charged with the sanitation of meat markets and abattoirs, with the enforcement of the Bedding Law, with the inspection of State institutions, and it carries on considerable swimming pool sanitation work.

Practically all of the new pasteurization plants, milk houses, and dairy barns built in the state during the past seven years have been designed in this office. This is a very valuable aid in improving milk sanitation. While many of the simpler structures are built from stock plans, it is rarely possible to repeat a pasteurization plant design. This requires the services of an engineer expert in this work.

From the foregoing, it will be seen that this Division has been doing creditable work as compared with other states.

On the table entitled "Effectiveness of Promotional Work of the Division of Sanitary Engineering" it will be seen that not in a single instance did North Carolina rate lower than 104 per cent of her proportionate share with an average of 224 per cent. All this was done despite certain complaints that the South did not receive her share of relief funds.

It has already been noted that North Carolina has more milk ordinance towns than any other state in the Union, save one. Furthermore, North Carolina is *first* among the states in the Union in the number of Honor Roll towns, but that is not enough. In sanitary work, the surface has only been scratched.

The extent of the work done is shown by the following tabulation:

<i>Type of Inspections</i>	<i>No. of Inspections</i>
<i>PRIVY (Exclusive of Community Sanitation)</i>	
Number of privy inspections.....	2,936
<i>DAIRY SANITATION</i>	
Number of dairy inspections.....	4,425
Number of pasteurization plant inspections.....	604
<i>MUNICIPAL WATER</i>	
Number of water inspections.....	1,087
<i>MUNICIPAL SEWERAGE</i>	
Number of sewerage inspections.....	677
<i>PRIVATE WATER SUPPLIES</i>	
Number of water inspections.....	2,701
<i>PRIVATE SEWAGE DISPOSAL</i>	
Number of inspections.....	1,988
<i>FEDERAL HOUSING ADMINISTRATION</i>	
Number of FHA approvals.....	735
<i>SHELLFISH SANITATION</i>	
Number of shellfish inspections.....	1,358
<i>CAFE AND HOTEL SANITATION</i>	
Number of cafe inspections.....	6,846
Number of hotel inspections.....	980
<i>SCHOOL SANITATION</i>	
Number of school inspections	344
<i>MEAT MARKET AND ABBATTOIR SANITATION</i>	
Number of meat market inspections.....	6,127
Number of abattoir inspections.....	235
<i>BEDDING</i>	
Number of retail places inspected.....	2,572
Number of manufacturing plant inspections.....	6,319
Number of pieces of bedding condemned.....	7,956
Number inspections of waste dealers.....	84
Number of prosecutions.....	16
Number of sterilizers condemned.....	1
Number of bales of material condemned.....	4

MISCELLANEOUS

Number of swimming pool inspections.....	21
Number of summer camp inspections.....	37
Number of fairground inspections.....	392
Number of penal or charitable institution inspections.....	49

Much of this work has been accomplished by "burning the midnight oil" by many of the employees of this Division. Frequently, almost driving efforts have been made to do this work because of the unprecedented opportunity to accomplish public health work through coöperation with the PWA, the WPA, the ERA, CWA, the Public Health Service, and other outside agencies at this particular time. It has been done despite the ever mounting demands from the public for increased health service, information, and assistance.

Much of this work has been accomplished because of the policy of maintaining very low salary standards, thus making it possible to employ more men with less appropriation than would have been possible had salaries commensurate with the work been paid. It appears now, however, that the salary schedule must be raised in order to keep the engineers and sanitarians, now in the Division, from being attracted elsewhere.

A policy has been adopted by this Board of offering valuable scholarships to Public Health workers. This is an excellent policy; however, it should be borne in mind that once good men receive a high degree of specialized training, their services become more valuable to this Board and more attractive to other State Boards of Health and to the Public Health Service. Furthermore, with the record being made by this State in a number of lines, as above indicated, and with our present very low salary scale for engineers and sanitarians, it is only natural that our best men are invited elsewhere and often leave to accept higher salaries.

In regard to personnel, entirely too many of the best men employed by this Division have left and are leaving, and it is known that others are considering leaving the service to accept positions elsewhere at higher salaries. Some are known to have received offers of better salaries elsewhere, but have elected to continue on, at least for the present. This condition causes a heavy turnover in personnel. This heavy turnover increases the work and expense of continually training new employees, and the efficiency and the productivity of the Division cannot be what they should as long as our best men come into the service, prove their worth and value, and leave all too soon as they receive invitations to similar jobs with the Public Health Service, and other State Boards of Health at higher salaries.

The latest resignation is that of Assistant Engineer John Andrews. Mr. Andrews was one of the best men this Department has ever had. He leaves his salary of \$2,250 here to accept a position with the U. S. Public Health Service at a salary of \$3,158 plus certain other emoluments.

Not only was Mr. Andrews our key man in charge of milk work, but several months ago this Division was advised that the Public Health Service could no longer compute all the Federal milk survey ratings, and that we should make arrangements to assume this activity. Under the circumstances, this means that North Carolina will have to drop out of the picture so far as complete Federal ratings are concerned.

DIVISION OF ORAL HYGIENE

The Division of Oral Hygiene of the State Board of Health is primarily interested in the prevention of diseases of dental origin. Its program, therefore, is one of education, the teaching of mouth health and its relation to general health.

The public school offers the ideal place for the dissemination of this instruction. There, the greatest number of persons can be reached, the atmosphere is favorable for learning and the individuals are of the most teachable age.

The dentist is the person to do this teaching. He is the only one who has a sufficient knowledge and understanding of mouth health to be able to teach that subject correctly and with authority. His professional background gives the dentist an additional prestige as a teacher.

These are the basic principles of the program as it is being conducted in the schools of North Carolina by the Division of Oral Hygiene of the State Board of Health.

North Carolina is the only state in the Union with a staff of public health dentists who go into the classrooms and teach didactically. During this biennium the dentists on the staff taught mouth health to 320,737 children in their own classrooms.

After the didactic teaching has been done, the mouths of the children in each grade are inspected. The dental office is then set up, and the demonstrative part of the teaching is begun. In this teaching the necessary dental corrections are made for the underprivileged children under thirteen years of age, without any cost to them. The children are classified as to their parents' financial standing by the classroom teachers. During this biennium, the necessary dental corrections were made for 138,392 underprivileged children.

Children whose parents are financially able to take care of their dental needs are referred to their own dentists. This is done through cards, mailed to the parents, stating that the children are in need of dental attention and suggesting that they consult their own dentists. Of course, no diagnoses are made, and no suggestions as to the selection of dentists are offered.

The classroom teaching is supplemented by graded, mouth health education material which the dentists leave with the teachers for follow-up work. The teachers are also supplied with bibliographies of the health materials available for use in their respective grades. It is believed that furnishing this material to the teachers has not only helped them in their teaching, but has brought about among them a better understanding of the mouth health teaching program of the Board of Health. The splendid coöperation received from the teachers and principals is one of the outstanding features of the activity during this biennium. A handbook on mouth health is now being prepared for the use of the teachers.

Another phase of the educational program is a dental news service for the school newspapers. Mimeographed sheets, containing stories illustrating some phase of caring for the teeth are sent to schools, in whatever quantities are

desired, every two weeks during the school year. The circulation of each issue is approximately 45,000.

The puppet show continues to be a popular visual education project and is in great demand. During this biennium the puppet show entertained and taught mouth health to 348,132 children.

Having proven by a successful program that the public school is the proper place to teach mouth health and that the dentist is the proper person to teach it, the Director of the Division realized that the activity could be made more effective if the dentists were better trained to teach. In addition to knowing his subject, the school dentist should know how to present it and should, above all, understand children. With this in view, an Institute of Public Health Dentistry is held for six weeks each summer at the University of North Carolina, and the dentists on the staff receive training in child psychology, methods of teaching and public health. This Institute has been of great value to the dentists on the staff and is now attracting dentists engaged in public health dentistry in other states.

National attention was attracted to the dental program of the North Carolina State Board of Health by the mouth health education exhibit which won the first award at the meeting of the American Dental Association in St. Louis during the first year of this biennium.

Mouth health education programs were conducted in sixty-four county and four city units during the year, 1938-39 and in sixty-eight county and three city units during the year, 1939-1940. It was impossible to conduct programs in all of the counties that applied for them and were willing to appropriate their part of the expense. This was due to our inability to secure a sufficient number of good dentists at the salary paid for this service and to lack of funds with which to meet the state's half of the expense of these programs.

The following is a summary of the clinical activities of the dentists on the staff.

Total number of children treated	138,302
Total number of children referred to local dentists for treatment	137,229
Total number worked for who were grade repeaters	53,848

AMOUNT AND CLASS OF TREATMENT ITEMIZED AS FOLLOWS

Number amalgam fillings	78,584
Number cement fillings	16,299
Number silver nitrate treatments	259,894
Number teeth extracted	101,750
Number children—teeth cleaned	134,587
Number miscellaneous treatments	13,067
TOTAL NUMBER OF OPERATIONS	604,181
Number of lectures on Oral Hygiene	7,769
Total attendance at lectures	320,737

STATE LABORATORY OF HYGIENE

The activities of the State Laboratory of Hygiene have again increased during the biennial period July 1, 1938 to June 30, 1940 over those of previous bienniums. Approximately two-thirds of the work at the State Laboratory of Hygiene is the examination of specimens and one-third the preparation of biologics. During the period July 1, 1938 to June 30, 1940 the Laboratory made 907,565 examinations of specimens in comparison with 618,568 for the previous biennium, an increase of more than 46 per cent.

In our last report we called attention to the necessity of conserving public health laboratory facilities. It is essential that additional emphasis be placed on this need, since we do not have sufficient personnel or funds to render all of the service which the public expects of us. The wider application of modern public health procedures naturally calls for more of the scientific assistance which a modern laboratory can render; consequently, it is desirable that the most careful and intelligent discrimination be used in the selection of specimens that are sent to the Laboratory and in the use of products of the Laboratory.

The examination of specimens of water is historically the first duty of the Laboratory, since it was primarily for this purpose that the General Assembly of 1907 enacted laws creating the State Laboratory of Hygiene. During the biennium there has been a definite increase in the number of specimens of water from public supplies, although the total number of specimens decreased from 15,915 to 14,345. This decrease is due to a smaller number of specimens sent from private supplies which is evidence that public health workers are conserving laboratory facilities and are refraining from sending specimens from many supplies which can be judged unsafe by intelligent inspection. The Laboratory should be used only to reveal hidden or concealed sources of contamination. No sample should be sent from supplies where there is visible evidence of possible pollution. No sample should be sent from an open well or an unprotected spring.

For years the Laboratory has urged that Typhoid Fever be diagnosed in the early stages and has offered as an aid the Blood Culture Method of assisting in this objective. There has been a most encouraging response from the profession as manifested in the increase from year to year and biennium to biennium of the number of blood cultures made by the Laboratory. During the period July 1, 1938 to June 30, 1940—8,447 specimens of blood were cultured in comparison with 7,313 for the previous two year period. The typhoid bacillus was isolated in 528 of these specimens in comparison with 346 for the previous biennium. A higher percentage of typhoid reported in North Carolina was based on a blood culture during the past years than ever before. Since typhoid bacilli occur in the blood stream during the early stages of the disease and before they are ordinarily found in the discharge of the intestinal tract, the blood culture method of examination makes it possible for a diagnosis to be made and precautionary measures to be installed before the patient can ordinarily transmit infection. With an early diagnosis and prompt establishment of control procedures secondary cases of typhoid can

be prevented. Blood Cultures are also helpful as an aid to diagnosis in a considerable number of other diseases. The number of such cultures have remained fairly constant.

Cultures of feces and urine increased from 4,895 in the previous biennium to 5,116 in the present—thus revealing the increased use of cultural releases for typhoid patients. Most typhoid carriers have had clinical typhoid fever, therefore, it is logical that we look for typhoid carriers where we are most likely to find them. Typhoid carriers are not necessarily a menace, provided health authorities know who they are and can give them proper instructions and supervision. When we make sufficient progress all patients suffering from typhoid fever will be released only by cultural methods.

Agglutination Tests are frequently helpful in aiding the physician in making a diagnosis. During the past biennium 13,704 agglutination tests for typhoid fever were made in comparison with 10,805 such tests for 1936-1938; of these 371 were reported as positive. Although agglutination tests for typhoid fever do not become positive until the later stages of the disease, they are helpful to the physicians who are called to see their patients for the first time when the illness has existed for some two or three weeks. When an early diagnosis cannot be made by blood cultural methods it is still desirable that a diagnosis be made. The agglutination test fills this need. Control methods based on an agglutination test are consequently late but it is better that they be late than never.

The Weil-Felix Reaction is an Agglutination Test using the bacillus proteus as the antigen. It is helpful in the diagnosis of Rocky Mountain Spotted Fever, Endemic Typhus and other diseases due to kindred organisms. During the period July 1, 1938 to June 30, 1940—9,817 Weil Felix tests were made; 337 of which were reported as positive as compared with 7,611 for the previous biennium with 255 positive reports. The distribution of positive reports indicates that the infection is spread rather widely throughout North Carolina.

Undulant Fever is apparently on the increase in North Carolina. For a considerable number of years the number of new cases of Undulant Fever have remained almost constant until 1939 when there was a definite upward trend in their prevalence. Nine thousand two hundred and twenty-three examinations with 93 positive reports were made between July 1, 1938, and June 30, 1940, as contrasted with 7,636 examinations and 85 positive reports for the same period of 1936-1938. An investigation of this increase should be made, since it appears that some new factor has entered the problem.

There has been an alarming increase in the prevalence of Tularemia, the so-called Rabbit Fever, as we in the Laboratory view the problem. During the biennium 899 examinations and 77 positive reports have been made, whereas, during the period covered by the past biennium only 521 with 31 positive reports were made. The distribution of positive reports is continuing to cover a wider area.

Public health interest in syphilis has increased markedly during the past two years. This is reflected by an increase in the number of examinations made in the Laboratory. During the period July 1, 1938 to June 30, 1940—738,057 serological tests for syphilis were performed in comparison with 461,036 such examinations in the previous comparable period. All specimens of blood received by the Laboratory are first examined by the Kline Test. All

specimens giving a Negative reaction by this test are reported Negative. All specimens giving Positive or Doubtful reactions by the Kline Method are retested by the Eagle Complement Fixation (Wassermann) Test and only specimens giving a Positive reaction by this test are reported Positive. This procedure aids materially in decreasing the number of falsely positive reports. Unfortunately, there is no perfect serological test for syphilis, since all tests will give from 15 to 20 percent falsely positive reactions in patients with malaria who do not have syphilis. There are numerous other diseases which tend to give falsely positive reactions with our serological tests for syphilis; consequently, the interpretation of these tests by the physician is of utmost importance. The State Laboratory of Hygiene has participated in all of the evaluation studies conducted by the United States Public Health Service since 1935. In the 1939 Study our Kline Test had a sensitivity rating of 90 per cent and a specificity rating of 99 per cent. Our Eagle Complement Fixation Test had a sensitivity rating of 85.6 per cent and a specificity rating of 99 per cent.

Microscopic Examinations have many fields of usefulness. The examination of specimens from patients suspected of having diphtheria or of being carriers increased from 15,641 to 18,210 for the present biennium. Since all patients suffering from diphtheria should be released from quarantine only by cultural procedures, we hope that this increase represents an improvement in the methods used for controlling diphtheria.

With Tuberculosis the number of specimens examined during the present biennium and the past biennium were practically the same—17,462 for the period just past and 17,127 for the period preceding it.

For Malaria fewer examinations were made during the past biennium than were made during the period July 1, 1936 to June 30, 1938.

Rabies is still at the low part of its epidemiological cycle. One thousand eight hundred and eighty-four animal heads were examined during the present biennium as compared with 2,309 for the previous one—of these 553 showed evidence of rabies during the period July 1, 1938, to June 30, 1940; whereas, 722 were found positive during the comparable period, 1936-1938.

The largest number of microscopic examinations were made for Vincent's Angina, although there was a slight decrease in the number of examinations and a rather marked decrease in the number of positive findings during the present biennium as compared with the previous one.

For Gonorrhea there was a definite increase in the number of specimens examined, thus reflecting an intensified interest in venereal disease control, although there was a decrease in the number of positive findings: 2,456 positive reports being made for 1938-1940 as compared with 3,690 for 1936-1938.

Although we have urged that syphilis be diagnosed in the early stages and that the Laboratory aid to diagnosis be the Darkfield examination of Chancre Serum, the number of specimens sent to the Laboratory for examination has actually decreased. This may be due to the fact that most of our syphilis clinics are now equipped to make Darkfield examinations. It is hoped that this is true, since it would be pathetic to feel that during a two year period only 47 new cases of syphilis were diagnosed in the early stages.

Intestinal parasites are still prevalent in North Carolina. During the period 1938-1940, 14,821 specimens of feces were examined with parasites

found in 1,958 as compared with 14,315 and 1,668 positive specimens in 1936-1938.

Of the products distributed by the Laboratory there has been a continued decrease in the amount of Tetanus Antitoxin. This will continue until we are in a position to put out a better product.

There has been little change in the demand for Diphtheria Antitoxin. There has been an encouraging increase in requests for Schick Test Material. We recommend that this test material be used on children under six years of age only after they have had Diphtheria Toxoid administered to them for the purpose of determining whether or not immunity has been provided by this procedure. For persons who have not had diphtheria immunization the Schick Test should be performed on all those over ten years of age. In conformity with the recommendations of the Subcommittee on Evaluation of Administrative practices of the American Public Health Association we are now recommending that two doses of Alum Precipitated Diphtheria Toxoid be administered to each child during its ninth month of life and that there be an interval of approximately one month between the two doses. This procedure will give a higher degree of protection to the individuals so treated. For community protection in localities where it is impractical to give two doses of Alum Precipitated Diphtheria Toxoid the administration of one dose to approximately two-thirds or more of the children between the ages of nine months or ten months will be effective in preventing epidemics of diphtheria. All children over ten years of age who are known to be susceptible as a result of the Schick Test should receive three doses of Ramon or a soluble toxoid with an interval of one month between injections. For susceptible adults who may be exposed by occupation to contact with persons harboring the diphtheria bacillus, Alum Precipitated Toxoid is not recommended. For such persons shown by a test to be susceptible three doses of Ramon Toxoid may be used. There has been an encouraging increase in the amount of Diphtheria toxoid distributed by the Laboratory.

There has also been a very slight increase in the amount of Smallpox Vaccine distributed.

The use of typhoid vaccine has remained practically stationary.

The decrease in the prevalence of rabies explains the reduction in the amount of antirabic treatments distributed. In March 1940 we substituted the Semple Method of preparing antirabic treatments for the Calmette Modification of the Original Pasteur which we have formerly prepared for distribution. We feel that the Semple Vaccine will be more popular with both the physicians and the patients.

We are discontinuing the preparation of our old Pertussis Vaccine and expect to prepare an improved product after the manner of Kendrick.

The enactment by the 1939 General Assembly of a law, requiring Pre-marital examinations and providing that the original report of the serological test performed by a laboratory approved by the State Board of Health, necessitated a plan whereby approval could be given to such laboratories. Since April 1939 approval has been given to approximately 50 laboratories. The basis of approval is as follows:

1. The laboratory must use one of the tests approved by the Advisory Committee of the United States Public Health Service. These are as follow: The Kahn, Kline, Eagle, Hinton Precipitin or Flocculation Tests or the Kolmer or Eagle Complement Fixation Test for Syphilis.
2. That only standardized antigens procured from approved sources be used.
3. That positive and negative controls be run with each group of tests.
4. That the technicians actually performing the tests be eligible for registration by the National Board of Medical Technologists.
5. That the conduct of the laboratory will be in accordance with recognized standards of the laboratory ethics.
6. That an inspection of equipment, procedures, etc. may be made by the State Health Officer during regular working hours.
7. That the laboratory participate in and give a creditable performance in Evaluation Studies.
8. That the laboratory will not advertise or imply that it has been approved for any type of laboratory work except that enumerated on the certificate of approval.
9. That the laboratory be conducted under the supervision of a physician licensed to practice medicine.

Evaluation Studies so far conducted convey the impression that most of our approved laboratories are performing creditable work.

February 28, 1940 was the official completion date of the building program of the State Laboratory of Hygiene. These buildings were made possible by the sale of \$160,000 of Revenue Bonds as authorized by the 1937 General Assembly and the allocation of a PWA Grant of \$132,943. Acquisition of funds from various sources brought the total cost to \$311,000. The plant consists of the Central Laboratory Building on Caswell Square, 214 West Jones Street and the Laboratory Farm which is located six miles West of Raleigh on U. S. Highway Nos. 1, 64 and 70.

The Central Laboratory Building consists of four stories. On the first floor are located the mailing room, the media preparation room, the dishwashing and sterilizing room, a storeroom, a small animal room and a machine shop. On the second floor are the business offices, the library, the water laboratory, the auditorium and the microscopic examination laboratory. On the third floor are found the filing room, the laboratory for serological examinations for syphilis and the bacteriological examinations. The fourth floor is devoted to the preparation of typhoid vaccine, pertussis vaccine, diphtheria toxoid, Schick Test material and the latter stages of the preparation of smallpox vaccine, diphtheria and tetanus antitoxin.

The State Laboratory of Hygiene Farm consists of approximately 280 acres, 80 acres of which is under cultivation, 200 acres in woodland. The farm has a frontage of 1,550 feet on three National Highways and two railways. On this farm are located the farm laboratory building, two horse barns, one sheep barn, two small animal buildings and a smallpox vaccine building, a root storage cellar and several wooden sheds. On the farm will be carried out the preliminary preparation of our antitoxins, our rabies vaccine and smallpox vaccine. The small animal buildings will make it possible for the laboratory

to produce the guinea pigs, rabbits, mice and other small animals which will be needed in routine operations. It will also be possible to grow on the farm the feeds best adapted to the needs of our animals.

The Shore Memorial Building was dedicated with appropriate ceremonies on February 21, 1940. Dr. S. D. Craig, President of the State Board of Health, presided. The invocation was offered by Bishop J. K. Pfohl, Winston-Salem. The speakers were introduced by Dr. John H. Hamilton, Director of the State Laboratory of Hygiene. There were addresses by His Excellency, Clyde R. Hoey, Governor of North Carolina; Dr. Carl V. Reynolds, State Health Officer; Mr. J. W. Kellogg, Assistant Director of the State Laboratory of Hygiene; Dr. G. M. Cooper, Assistant State Health Officer; and Dr. John A. Ferrell, Associate Director of the International Health Division of the Rockefeller Foundation. Greetings were brought from neighboring and friendly institutions by Dr. M. J. Rosenau, Division of Public Health, University of North Carolina; Dr. W. C. Davison, Dean of the Medical School, Duke University; Dr. William DeB. MacNider, Dean of the Medical School, University of North Carolina; Dr. E. S. King, Professor of Preventive Medicine, Wake Forest College; Dr. Hubert B. Haywood, President Elect, Medical Society State of North Carolina; Mr. E. C. Derby, Resident Engineer Inspector, Public Works Administration; Dr. M. V. Zeigler, Senior Surgeon, United States Public Health Service, Washington, D. C.; and Dr. John M. Saunders, Children's Bureau, Washington, D. C.

The April 1940 Number of the *Health Bulletin* was devoted entirely to the dedication of the Shore Memorial Building.

The physical plant of the State Laboratory of Hygiene will make it possible to increase personnel, improve services and extend facilities, if funds are available for those purposes. The Laboratory, as an institution, faces the future with the hope that its services may be in keeping with its traditions and with the facilities made possible by the new physical plant.

STATE LABORATORY OF HYGIENE, RALEIGH, N. C.

REPORT OF EXAMINATIONS MADE

	July 1, 1938-June 30, 1940				July 1, 1936-June 30, 1938
	Positive	Negative	Unsatisfac'y	Total	Total
Water Analysis:					
Bacterial and Chemical				14,345	15,915
Blood Cultures Typhoid.....	346	8,101		8,447	7,313
General Blood Cultures.....				1,350	1,376
Feces and Urine Cultures.....	400	4,716		5,116	4,895
Agglutination Tests:					
Typhoid and Para Typhoid.....	74	13,630		13,704	10,805
Weil Felix, Reaction.....	337	9,480		9,817	7,611
Undulant Fever.....	93	9,130		9,223	7,636
Tularaemia.....	77	822		899	521
Dysentery.....	2	111		113	107
Serological Tests for Syphilis.....				738,057	461,036
Microscopic Examinations:					
Diphtheria.....	1,365	16,839	6	18,210	15,641
Tuberculosis (Sputum).....	2,945	14,410	107	17,462	17,127
Malaria (Blood Smears).....	146	3,066	36	3,248	4,015
Rabies (Animal Brains).....	553	1,260	71	1,884	2,309
Vinecuts Angina.....	8,871	18,294		27,165	27,670
Gonorrhea.....	2,456	17,375	49	19,880	17,289
Darkfield (Chancre Serum).....	57	107	54	218	262
Spinal Fluid.....				260	397
Feces, Intestinal Parasites.....	1,958	12,597	266	14,821	14,315
Urinalyses.....				99	113
Animal Inoculations:					
Tuberculosis.....				70	60
Rabies.....				184	246
Miscellaneous.....				2,993	1,909
Total.....				907,565	618,568

STATE LABORATORY OF HYGIENE, RALEIGH, N. C.

REPORT OF BIOLOGICALS DISTRIBUTED

	July 1, 1935- June 30, 1940	July 1, 1936- June 30, 1938
THE FOLLOWING ARE PREPARED IN STATE LABORATORY OF HYGIENE:		
Tetanus Antitoxin:		
1,500 Unit Packages.....	4,868	11,584
5,000 Unit Packages.....	109	469
10,000 Unit Packages.....	80	0
Diphtheria Antitoxin:		
1,000 Unit Packages.....	622	741
5,000 Unit Packages.....	97	532
10,000 Unit Packages.....	14,750	13,341
Schick Tests for Diphtheria:		
10 Test Packages.....	1,294	0
50 Test Packages.....	2,243	4,149
100 Test Packages.....	1,076	0
Schick Control for Diphtheria:		
10 Test Packages.....	239	0
50 Test Packages.....	311	654
100 Test Packages.....	73	0
Smallpox Vaccine:		
Individual Tubes.....	101,104	109,020
50 Dose Vials.....	7,756	7,366
Typhoid Vaccine:		
3 cc Vials.....	7,450	13,157
10 cc Vials.....	168,695	166,876
Rabies Treatments.....	1,109	1,604
Pertussis Vaccine:		
5 cc Vials.....	4,607	4,390
10 cc Vials.....	7,113	6,079
Autogenous Vaccine.....	111	140
Bacterial Cultures.....	84	20
THE FOLLOWING ARE BOUGHT AND DISTRIBUTED AT COST:		
Diphtheria Toxoid:		
1 cc Vials.....	2,637	3,140
10 cc Vials.....	22,523	15,396
Neosarsphenamine and Sulpharsphenamine:		
0.1 Gram Ampules.....	244	488
0.2 Gram Ampules.....	1,031	1,075
0.3 Gram Ampules.....	414	863
0.4 Gram Ampules.....	1,176	2,149
0.6 Gram Ampules.....	103,074	141,969
0.9 Gram Ampules.....	25,346	48,607
4.5 Gram Ampules.....	3,818	13,041
Distilled Water:		
10 cc Vials.....	101,118	117,932
20 cc Vials.....	12,673	7,909
Scarlet Fever Antitoxin:		
Prophylactic Syringes.....	18	21
Therapeutic Syringes.....	9	14
Dick Test for Scarlet Fever.....	1,670	1,720
Blanching Test for Scarlet Fever.....	410	210
Erysipelas Antitoxin (Syringes).....	17	80
Meningitis Serum (Syringes).....	6	22
Bismuth Tartrate:		
20 cc Vials.....	2,015	3,449

STATE LABORATORY OF HYGIENE

Receipts

	July 1, 1938- June 30, 1940	July 1, 1936- June 30, 1938
BIOLOGICALS PREPARED IN STATE LABORATORY OF HYGIENE:		
Diphtheria Antitoxin.....	\$ 4,693.70	
Tetanus Antitoxin.....	3,252.67	
Rabies.....	4,258.70	
Autogenous Vaccine.....	430.00	
	\$ 12,635.07	\$ 19,469.48
ARTICLES BOUGHT AND DISTRIBUTED AT COST:		
Diphtheria Toxoid.....	\$15,385.32	
Neoarsphenamine.....	19,387.07	
Distilled Water.....	5,638.79	
Scarlet Fever Antitoxin.....	90.00	
Dick Test.....	57.50	
Blanching Test.....	19.50	
Erysipelas Antitoxin.....	76.50	
Antimeningococcus Serum.....	9.00	
Bismuth Tartrate.....	1,059.25	
	41,722.63	52,316.02
TOTAL.....	\$ 54,357.00	\$ 71,785.50
Refunds.....	531.97	1,009.29
NET TOTAL.....	\$ 53,825.03	\$ 70,776.21
Water Tax.....	32,270.08	31,006.71
Specimen Outfits.....	32,687.56	0.00
Special Fees.....	461.00	182.00
Miscellaneous.....	830.25	1,326.86
Silver Nitrate.....	705.60	
TOTAL.....	\$ 120,780.52	\$ 103,291.78

FINANCIAL STATEMENT

TOTAL EXPENDITURES.....	\$ 239,928.99	\$ 220,183.71
TOTAL RECEIPTS.....	\$ 120,780.52	\$ 103,291.78
APPROPRIATION.....	\$ 119,148.47	\$ 116,891.93

STATE LABORATORY OF HYGIENE

Expenditures

	July 1, 1938- June 30, 1940	July 1, 1936- June 30, 1938
Salary—Director.....	\$ 11,000.00	\$ 10,708.00
Salaries—Staff.....	102,124.70	96,612.64
Salaries—Extra.....	3,187.07	2,214.73
Office Supplies.....	1,169.36	809.02
Occupancy Supplies.....	489.87	500.03
Scientific Supplies.....	64,000.49	77,850.01
Fuel.....	397.25	531.25
Agricultural Supplies.....	5,088.27	5,810.55
Postage and Box Rent.....	12,205.12	11,544.14
Telephone and Telegraph.....	287.18	91.13
Freight and Express.....	602.87	1,018.42
Travel Expense.....	312.01	327.82
Motor Vehicle Operation.....	2,181.09	1,790.72
Repairs Equipment.....	707.90	717.40
Repairs Building.....	1,172.12	583.88
Printing and Binding.....	2,065.87	1,795.98
Lights, Power, Water.....	4,246.85	3,402.99
General Expense.....	349.01	36.51
Office Equipment.....	571.35	1,376.93
Scientific Equipment.....	1,884.31	1,955.18
Insurance and Bonding.....	682.80	471.38
Workmen's Compensation.....		35.00
Bonds.....	10,000.00	
Bond Interest.....	8,487.50	
Transfer to Building Fund.....	6,716.00	
TOTAL.....	\$ 239,928.99	\$ 220,183.71

DIVISION OF EPIDEMIOLOGY

This Division has expanded more in this biennium than at any time since it was established. This is due largely to the venereal disease control program and to the Central Tabulating Unit now operating under the Division. This Unit now handles mechanically the tabulation, recording and analyses of reported case incidence of communicable diseases formerly done by hand in the Division. The rapidly-growing venereal disease control program and other new services of the Division, which mean increased correspondence, data to be tabulated and compiled, reports to be prepared, and similar duties, have replaced the office routine formerly devoted to functions now carried on by the Central Tabulating Unit.

In addition to the specific achievements of the Venereal Disease Control Unit, the Malaria Investigation and Control Unit and the Central Tabulating Unit, which will be discussed later, the Division of Epidemiology has carried on the usual routine functions, which may be described briefly as follows: The Division Director, through a daily report from the Central Tabulating Unit, is in constant touch with the communicable disease situation in the state. When an unusual disease incidence occurs in a community, the Director, upon request of the local health officer, makes special investigations. If the epidemiological character of the disease is not well understood investigation is often made upon appearance of the first case. The Director also receives copies of case card on each case reported of such diseases as poliomyelitis, meningitis, Rocky Mountain spotted fever and endemic typhus fever, on the same day such reports arrive. Spot maps, charts and graphs are kept whenever disease incidence indicates their need or their value. Annual morbidity reports are prepared and distributed from this Division to every local health officer, every state health department in the United States, every medical college library, many university and hospital libraries, numerous private physicians and educators, the Library of Congress and to a number of foreign countries.

During the biennium many talks have been made before civic, educational and professional groups, radio talks given on various communicable disease problems, and press articles furnished. In January 1939 the short intensive course in the typing of pneumonia serum was repeated at Duke for the benefit of those laboratory technicians who did not attend it in 1938.

Immunization in the state was carried on by the full-time local health departments or by local physicians in counties without full-time health service; in the latter instances such work is financed by local funds. The State Board of Health has no appropriation to carry on this work on a state-wide basis.

Quarantine reports from counties without full-time health service are checked against records here and certified by this Division. The quarantine officer is paid on a fee basis schedule based upon the population of his county. Payment is made to him by the county according to certification received from this Division.

In March 1939 a Syphilis Symposium was held at Duke Medical School under the sponsorship of the State Board of Health and directed by this Division. The program of distinguished speakers included Doctors Moore, Stokes, O'Leary, Cole, Jeans, Ingraham and Vonderlehr, all authorities of wide recognition on the subject of syphilis. Approximately 350 physicians from this and other states attended this symposium and were very appreciative of the benefit derived therefrom.

Early in 1939 three health laws were enacted by the General Assembly which added considerably to the work of this Division. The law requiring premarital examinations and which became effective immediately upon enactment, continues to bring a stream of inquiries from this and other states for information, as well as requests from various registers of deeds for supplies, information and rulings on different points in the law. A diphtheria immunization law was enacted at the same time as was a prenatal serological test law. Forms for the proper operation of these three laws were designed and are distributed by this Division. Instructions to registers of deeds, health officers and physicians relative to these laws are furnished from this Division. A change was made in the birth certificate form in order to obtain supplementary information under the prenatal serological test law, which became effective in January 1940.

During the biennium the Division Director and the two Venereal Disease Consultants have spent much time in the preparation and revision of budgets.

In 1939 there was an outbreak of poliomyelitis in one western county and in several extreme northeastern counties. The attack rate for the population involved was so high that these outbreaks could be termed local epidemics. The disease did not spread beyond the counties involved.

In the summer of 1939 an outbreak, diagnosed by animal inoculation by the National Institute of Health as Rocky Mountain spotted fever, occurred in the village of Wananish in Columbus County. The Division Director reported that considering the number of cases in a small population and the short length of time in which the group of cases developed, the attack rate was extremely high; however, only one of this group of patients failed to recover.

During this biennium a film on pneumonia control entitled "A New Day," which is released by the Metropolitan Life Insurance Company in coöperation with the U. S. Public Health Service, was exhibited throughout North Carolina under the sponsorship of the State Board of Health. It was shown in 75 theaters to about 61,055 persons, which is considered a very good record as compared with other states.

A film entitled "No Good on Earth" was purchased by this Division in the biennium and is being used in rat eradication campaigns throughout the state in endemic typhus fever control. Toward the end of the biennium a consultant engineer was employed to devote his full time to this work, which is developing very satisfactorily.

During the biennium the staff of this Division attended several out-of-state meetings of value in the work of the Division. The Director and Venereal Disease Consultants attended a venereal disease conference in Atlanta, Georgia, which was called by the United States Public Health Service. The Director attended a meeting in Washington to discuss problems and procedures in mechanical tabulation units in the various states. The Director and two Venereal Disease Consultants also attended the meeting of the

Neisserian Society in New York, since special emphasis will now be given to the treatment of gonorrhea in the venereal disease clinics of the state.

The following table shows the incidence by month of reported diseases for the calendar year 1939 for the state as a whole:

DISEASE	Total	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Anthrax.....													
Chancroid.....	297	16	8	17	21	46	24	44	32	22	17	30	20
Chicken Pox.....	3,765	497	689	646	372	435	228	18	19	26	117	290	428
Cholera.....													
Dengue Fever.....													
Diphtheria.....	2,368	136	102	68	58	37	33	44	137	368	642	476	267
Dysentery (Bac.).....	22		1	1	1		5	5	2			4	
Endemic Typhus F.....	122	9	2	1	9	4	6	32	15	10	11	4	19
German Measles.....	244	12	23	54	33	31	18	16	8	14	15	7	13
Gonorrhea.....	4,442	386	280	348	309	348	322	438	456	412	429	375	339
Influenza.....	1,544	5	370	749	142	30	3	6		2	11	14	212
Malaria.....	629	48	43	12	54	71	31	104	83	58	58	33	34
Measles.....	20,031	2,041	4,330	5,189	2,888	2,708	1,094	212	47	30	235	523	734
Meningitis.....	59	7	7	8	5	4	4	5	6	4	3	2	4
Ophthalmia Neon.....	19	1		1	1	1		3	3	1	1	3	4
Paratyphoid Fever.....	16		2			7	2	1	3	1			
Pellagra.....	214	10	6	11	24	24	54	33	26	7	5	11	3
Plague.....													
Polioomyelitis.....	116	3	2		1	2	9	20	32	20	19	6	2
Psittacosis.....													
Rabies.....	1											1	
Rocky Mt. Sp. Fev.....	41	1					9	14	11	5	1		
Scarlet Fever.....	2,599	247	264	203	108	71	64	63	106	239	404	464	366
Septic Sore Thr.....	116	5	12	9	11	10	2	8	7	10	21	15	6
Smallpox.....	15			1	2		4	2	1	1	1	1	2
Syphilis.....	28,843	2,699	2,475	3,172	2,242	2,181	1,874	2,412	2,510	2,669	2,363	2,375	1,871
Trachoma.....													
Tuberculosis.....	2,366	250	45	1	218		141	573	422	106	313	137	160
Tularemia.....	26	12	3	2	2	1			1			2	3
Typhoid Fever.....	343	9	12	14	16	19	43	80	76	34	21	9	10
Typhus (European).....													
Undulant Fever.....	25	1	1	2	1	1	3	2	3	3	6	1	1
Vincent's Infect'n.....	14	2		7					1	2	1	1	
Whooping Cough.....	9,321	1,202	1,124	1,393	1,077	1,056	1,074	825	444	337	260	275	254
Yellow Fever.....													
TOTALS.....	77,598	7,599	9,801	11,909	7,595	7,087	5,047	4,960	4,451	4,381	4,957	5,059	4,752

Central Tabulating Unit. This Unit, made possible by the enactment of the LaFollette-Bulwinkle Bill, began operation late in January 1939. The venereal disease control program was then the sole concern of the Unit. For this program the Unit was to maintain the treatment records of each venereal disease patient being treated in a public clinic in North Carolina and to submit to participating clinics each month a detailed analysis of each clinic's population, with lists of patients who had lapsed from treatment. Soon, however, it was found desirable for the Unit to handle communicable disease work, and in June 1939 the County Health Division had added its statistical work to this Unit. Late in the Fall of 1939 procedures for preparing birth and death registers for the Division of Vital Statistics were revised so that this Unit

could prepare them, thereby eliminating the necessity of photostating. By the end of the biennium this Unit was providing service to 229 clinics throughout North Carolina. It was furnishing weekly and monthly communicable disease reports to the Division of Epidemiology and quarterly County Health activity reports to the United States Public Health Service and to each full-time health area, as well as maternal and child health reports to the Division of Preventive Medicine. In addition, statistical work had been done for the Division of Industrial Hygiene, results of special surveys had been tabulated for the venereal disease consultants and the groundwork laid for placing the statistical work of the State Laboratory of Hygiene under the Central Tabulating Unit.

Venereal Disease Control. During the biennium there has been greater expansion in venereal disease control than in any other activity connected with the State Board of Health. This has been due not only to the great need for this work but also to the fact that the Board has been fortunate in securing funds vitally necessary to carry on such a program. Shortly before the close of the last biennium the State Board of Health received a gift of \$100,000 from the Zachary Smith Reynolds Foundation for syphilis control. The expansion in this work began, therefore, with the opening of this biennium. Since the initial gift the Reynolds Foundation has increased its participation and at this time the State Board of Health is receiving \$200,000 a year from this source.

Federal funds also were made available to the State Board of Health at the beginning of the biennium and these have been approximately the same as Reynolds Foundation aid. The state appropriation of \$25,000 per annum has remained the same during the entire biennium. Local appropriating bodies have increased their appropriations in some instances to match state aid on a fifty-fifty basis.

An idea of the increase in growth of venereal disease control activities may be gained from the following tables:

Clinics at close of biennium in 1936.....	41
Clinics at close of biennium in 1938.....	120
Clinics at close of biennium in 1940.....	255

Number of treatments given by six-months period

January-June 1936	55,913
July-December 1936	63,668
January-June 1937	87,884
July-December 1937	104,192
January-June 1938	158,735
July-December 1938	252,117
January-June 1939	385,183
July-December 1939	429,642
January-June 1940	457,059

Prior to and with the expansion of the venereal disease control program many administrative details were encountered. As it was decided that one of the first essentials of a properly conducted control program was the training of properly qualified personnel to carry out the work in the clinics, many public health nurses and several physicians received training in venereal

disease control. All of these personnel have been employed and are now actively engaged in the work.

It was considered advisable to revise and design a record system so that we would have an accurate idea of the work being done. Accordingly, an entirely new record system was set up and is now used by all clinics. In the Central Tabulating Unit a mechanical system of record-keeping is employed, all records are tabulated and essential information regarding each clinic is furnished. A "Manual of Minimum Standards for Coöperating Venereal Disease Clinics" was prepared and distributed to all clinics in order to stimulate work of high quality and in order to have approximately similar activities carried out in all counties. Health Officers, clinicians, nurses and all other personnel engaged in venereal disease control received a copy of this Manual.

In order to carry out such an expanded program it was necessary to properly construct and equip clinic quarters where the actual examination and treatment of patients would be done. Reynolds Foundation funds and Federal grants-in-aid were received to equip each of the 255 clinics now in operation. Almost all of these clinics are now completely equipped with the necessary instruments, examination tables, etc. to properly examine and treat patients. Fifty-one darkfield microscopes, which are essential in the early diagnosis of syphilis, have been distributed. Twelve fluoroscopes have been distributed to the larger clinic centers so that patients may be properly examined.

A great difficulty encountered in this program has been the treatment of patients in rural counties. Many of them are indigent and unable to secure transportation to the nearest clinic. An attempt to remedy this condition has been made by the establishment of mobile units in some of the more isolated sections of the state. In one instance the United States Public Health Service has coöperated by furnishing a completely-equipped truck which has been used in Anson County for approximately two years. Another truck unit, recently constructed by the state, is now used in Lenoir and Craven counties. Smaller trailer units also have been set up recently in the Edgecombe-Greene Health District and in Duplin County. These mobile clinics are still in the experimental stage, but it appears there is a definite place for them in the more rural districts.

During the biennium the State Board of Health coöperated with the State Highway and Public Works Commission in making a survey in all the prison camps in North Carolina to determine the prevalence of syphilis. As a result of this survey provision has been made by the Highway Department for the furnishing of treatment for all prisoners under their jurisdiction.

A survey was also made in Onslow County in order to determine the prevalence of syphilis among the Negro population in a given area.

In summarizing venereal disease control activities for this biennium it may be emphasized that during the first part of this period attention was chiefly directed toward the expansion of clinic facilities in order to reach the greatest number of people. This has practically been accomplished and now an attempt is being made to improve the quality of these services so that within a short time North Carolina will have a venereal disease control program second to none.

Malaria Investigation and Control. This Unit, consisting of one engineer, one entomologist and two laboratory technicians, has continued to operate in accordance with the plan outlined in the previous Biennial Report. The

primary functions of this Unit are: (1) To establish the malarious areas within the State by the employment of recognized scientific practices; (2) To determine the cause of malaria transmission in each area thus established; (3) To formulate the most feasible control plan in each malarious area; (4) To promote the adoption and financing of recommended control measures; (5) To furnish general supervision to the control programs in operation.

The establishment of malarious areas is done on a county-wide basis, by blood slide surveys in the schools. Before a detailed malaria survey is begun in a county the local health officer agrees to allow his personnel to take blood slides from all school children through the first six grades. After the slides are examined by the two laboratory technicians the precise location of the home of each child with a positive slide is established with a symbol on a large county map. The density of these symbols shows the foci. In areas thus shown to be highly malarious detailed malariological studies are made which include: a spot map showing all positive blood slides, all cases of malaria disclosed by house-to-house interviews and verified by the family doctor, all water and water courses within one mile of the area, and all areas found to be breeding *Anopheles quadrimaculatus* mosquitoes. A determination and cost estimate is then made of the most effective and feasible methods of control. Draining or filling are recommended wherever it is economically practical to destroy breeding areas by these methods. On ponds which cannot be destroyed on account of their economic or recreational values mosquito-breeding can be controlled by the application of oils, Paris green or other larvicides. Where no other form of control can be carried out well-screened homes will greatly reduce the amount of malaria.

During the biennium 32,690 blood slides were taken under the direction of this Unit and 29,088 examined by the technicians. The following tabulation gives the results of these surveys in counties in which the examinations were completed during this period:

County	Race	Total Slides Examined	Total Positive	Per Cent Positive
Edgecombe	White	2,067	27	1.3
	Colored	2,562	152	5.0
	Total	4,629	179	3.9
Robeson	White	3,519	39	1.1
	Colored	331	8	2.4
	Indian	1,082	60	5.5
Total	4,932	107	2.2
Wayne	White	3,664	30	0.8
	Colored	2,686	12	0.4
	Total	6,350	42	0.7
Pitt	White	3,534	25	0.7
	Colored	3,053	38	1.2
	Total	6,587	63	1.0

County	Race	Total Slides Examined	Total Positive	Per Cent Positive
Halifax	White	3,134	14	0.5
	Colored	3,675	72	2.0
Total		6,809	86	1.3
GRAND TOTAL		29,307	477	1.6

In May 1937 the State Board of Health adopted regulations governing the impounding of waters. No pond can be built in the state without a permit which embodies an agreement to conform with these regulations both in the construction and maintenance of the pond. These permits are issued by the engineer of this Unit and periodic inspections made to see that ponds are maintained so as not to become hazards to the public health.

During the biennium the Unit has been very active in promoting and supervising control measures in urban communities. A number of towns have passed ordinances which were recommended and provided inspectors to see that they are enforced. These ordinances prohibit the maintenance of places which breed mosquitoes on private premises. The same towns are conducting larvicide programs with very gratifying results.

On all of the major hydro-electric developments within the state control measures are carried out on the reservoirs to prevent the breeding of malaria mosquitoes. This Unit assists the power companies in conducting their operations by making inspections and recommendations. It is believed that by establishing the malarial foci this Unit will make all future control work more effective and will furnish means by which work done can be evaluated with a fair degree of accuracy.

DIVISION OF VITAL STATISTICS

The Bureau of Vital Statistics has performed its functions of recording and preserving all birth and death certificates registered in the state during the biennium. The duties included the collection, editing, filing, indexing and tabulation of over 112,000 birth and death certificates annually, and the certification and verification of over 12,000 annually.

The activities increased greatly during the biennium. The additional purposes for which birth and death certificates are being demanded has almost doubled the requests for verifications of age and certified copies of certificates. This demand has been further increased during the last month of the biennium, and is expected to become greater, due to the necessity of verifying age and establishing citizenship in connection with our National Defense Program.

The Bureau of Vital Statistics was created by an Act of the General Assembly of 1913 and began the registration of births and deaths in October of that year. Births and deaths occurring in years prior to this are not registered. Because of the great demand for records of births that occurred before 1913, and since there was no specific section in the Vital Statistics law providing for filing these, the Bureau of Vital Statistics has accepted such records if the claims were substantiated by documentary proof. The applications for delayed registration have been heavy during the latter months of the biennium and continues to increase.

The fundamental features of our system of registration of births and deaths are; first, each city, each incorporated town, and each township constitute a local registration district. The State Board of Health has authority to abolish or consolidate these local registration districts, even to the extent of consolidating all districts in a county. Such consolidations have been made frequently in the case of small incorporated towns, the town being consolidated with the township district. When it is considered advisable for reasons of economy or efficiency in registration, an entire county is consolidated and the health officer appointed registrar. This has been done in fifteen counties. Upon the appointment of the health officer as local registrar for the entire county, the fees formerly used to pay township registrars go into the budget of the county health department to be used for health service. This consolidation has been made only with the consent and at the request of the local authorities.

Second, with the exception of counties in which the health officer has assumed the duties of local registrar, township registrars are appointed by the chairman of the board of county commissioners of the respective counties, and the town and city registrars by the mayor of the municipality. It is the function of the local registrar to carefully examine each certificate of birth or death presented for recording, in order to ascertain whether or not it has been made out in accordance with the provisions of the Vital Statistics Law and the instructions of the State Registrar; and if any certificate is incomplete or unsatisfactory, it is his duty to require its satisfactory completion before registering it.

After making a copy of each certificate the local registrar forwards the original to the State Board of Health on the fifth of each month. At the same time he sends a list of the certificates registered with him to the County Health Officer.

Third, the doctor or midwife who attends a birth must file a birth certificate with the local registrar within five days after the birth occurs. In case the infant is born dead it is recorded as a birth and also as a death, but only one certificate, which is completed by the physician and the undertaker is required.

Fourth, the undertaker or person acting as undertaker is responsible for filing the death certificate. He must secure the personal and statistical particulars concerning the deceased from the person best qualified to supply them, and present the certificate to the attending physician for certification of cause of death. The completed certificate is filed with the local registrar in order to obtain a permit for burial, removal or other disposition of the body.

Upon receipt of the certificates by the Bureau of Vital Statistics, they are carefully examined for completeness and for conformity of data. Numerous personal and form letters and hundreds of amendment certificates are required to be sent monthly in order to complete the certificates satisfactorily. The certificates are tabulated, bound, indexed, and stored in a fire-proof vault. In order to be able to locate any certificate when called upon to do so they are coded and indexed by name according to the Russel-Soundex system. Current certificates are indexed on cards which are then mounted on visible panels. Later these panels are photographed and the photographs are bound in volumes for the permanent index.

In addition to the routine collection of certificates and securing their correction and completion, the activities of the Bureau of Vital Statistics include the tabulation and publication of mortality statistics. Detailed final tabulations are published in manual form yearly, and provisional monthly reports are made. Federal funds made available by the Social Security Act has permitted an increase in the service rendered by making it possible to employ four additional clerks.

North Carolina was one among the first of the Southern States to be admitted to the United States Registration Area, being admitted for deaths in 1916 and for births in 1917. As a member of the Registration Area transcripts of all births and deaths were required to be sent to the Bureau of the Census, for which a fee sufficient to cover the cost of transcribing is paid. In addition to the fee paid the Bureau of Vital Statistics has the privilege of franking much of the correspondence.

The Bureau is making every effort to secure complete registration. These records are of value to the individual and is an index to the health of our citizens. To the individual a birth certificate will furnish proof of the place of birth, the time of birth and parentage. The place of birth as recorded on the birth certificate may be used to establish citizenship or place of residence. The recent requirement of proving citizenship as a prerequisite for certain occupations in connection with national defense has greatly increased the value for this purpose. The time of birth may be used to prove age, to obtain admission to school, to establish the right to work, to qualify for Civil Service examination, to hold public office, to establish the right to vote,

to obtain a marriage license, to determine legal responsibility, or to prove qualification for or exemption from civic and military duty. Parentage, as stated in the birth certificate, is necessary to establish the right to inherit or bequeath property, to establish identity, to obtain settlement of insurance, to prove that parents have dependent children, to prove legitimacy or to furnish acceptable evidence of genealogy.

Death certificates may be used by individuals to furnish evidence in court, to secure pensions or life insurance, to establish titles and right of inheritance, or to give homeseekers and immigrants a guidance in selecting safe and healthful homes.

In organizations interested in health problems and procedures, birth and death records are used to determine the magnitude of health hazards, to plan new activities, to prevent epidemics, and to evaluate procedures. Since we used these records as a yard-stick for measuring our problems and progress it is essential that they be accurate.

The birth rate of 22.6 per 1,000 population in 1939 was only slightly lower than in 1938 when a rate of 22.7 was recorded. In actual numbers there were 80,421 births or 518 more than in 1938. When the rate is considered over a number of years, the trend has been downward, but for the past three years there has been little change.

The health conditions in North Carolina for 1939, as indicated by the death rate were, in general, very favorable. There were fewer deaths recorded from all causes, and consequently, a lower death rate than for 1938. The 31,928 deaths, exclusive of stillbirths, represents an annual death rate of 9.0 per 1,000 estimated population. This is the lowest rate ever recorded by the Bureau of Vital Statistics.

When the deaths from all causes are analyzed, it is discovered that the decrease in 1939 is accounted for principally by the fewer deaths from infectious and contagious diseases. The group of degenerative diseases—heart diseases, chronic nephritis, cerebral hemorrhage, cancer, diseases of the arteries, diabetes, and angina pectoris—accounted for 14,457 deaths in 1939, or 45 per cent of the deaths from all causes. This was approximately 200 fewer than in 1938, but 300 more than for 1937.

When specific causes of death are considered, it is found that the death rates from typhoid fever, tuberculosis, diarrhea and enteritis, pneumonia, and most of the preventable causes have continued to decrease. Only one death has been reported as due to smallpox for the past eight years. The peak year for pellagra deaths occurred in 1930 when there were recorded 32 deaths for each 100,000 population. There has been a successive decline in the mortality every year since, with a rate of 5.8 for 1939. Diarrhea and enteritis, a principal cause of death in 1914, is tenth at present; the rate of 26.7 per 100,000 population being approximately one-third of what it was in 1914.

It is important, both to the individual and to health organizations, that we have complete and acceptable records of all births and deaths which occur in the state. We can only attain that objective when physicians, undertakers, midwives, registrars, and other individuals do their part. Since birth

and death certificates are important documents, it is essential that we have the legal signatures of physicians, midwives, and registrars. If everyone who has responsibility in connection with birth and death certificates will give the consideration to these documents which their importance deserves, we can have records which will fill the needs of individuals and which will make health protection more effective.

DIVISION OF COUNTY HEALTH WORK

At the beginning of the biennium July 1, 1938, there were sixty-seven counties and five cities operating full-time local health services in which the North Carolina State Board of Health and/or Federal Agencies were assisting financially. All of this number were under the direction of full-time health officers.

The following is a chronological list of full-time health services established during the biennium:

July 1, 1938—Alamance County.

July 1, 1938—Ashe and Alleghany counties (in district health service with Watauga).

July 1, 1938—Davie County (added to Forsyth-Stokes-Yadkin District).

July 1, 1938—Polk County (reorganized with Rutherford County in district health service).

July 1, 1938—Union County (reorganized under direction of full-time health officer).

September 1, 1938—Catawba County.

September 16, 1938—Cleveland County.

November 1, 1938—Currituck County (added to Dare-Hyde-Tyrrell-Washington District).

During the period July 1, 1938, to June 30, 1939, the sum of \$456,385.30 was available to the local health departments from agencies other than local and state. During the fiscal year July 1, 1939, to June 30, 1940, there was available from sources other than local or state the sum of \$505,791.44 for local health work in North Carolina.

The per capita cost of health service in the seventy-six counties with full-time health service during the fiscal year 1938-39 was .497 as compared with .533 for the fiscal year 1939-40. The per capita cost of health service in the five city health departments during the fiscal year 1938-39 was 1.139 as compared with 1.137 for 1939-40.

For the past four years all new health officer, sanitation and public health nursing personnel have had special courses of training to prepare them for the field of public health. During the biennium the following personnel received special public health training:

Health Officers.....	13
Public Health Nurses.....	54
Sanitary Engineers.....	2
Sanitary Officers.....	14
Laboratory Technicians.....	4

These numbers include only those trained through Public Health Service funds. After this personnel was trained, they were assigned to the State Board of Health and to local health departments. During the biennium the expan-

sion in the public health program made it necessary to add the following personnel:

Medical Officers.....	13
Public Health Nurses.....	74
Sanitation Personnel.....	5
Clerks	30
Laboratory Technicians.....	5
and follow-up workers.....	7

and, in addition, 184 dental weeks were added to the mouth health program.

At the end of the biennium on June 30, 1940, full-time public health service is in operation in seventy-six counties and five cities receiving financial aid through the North Carolina State Board of Health and Federal Agencies. This service is rendered by the following whole-time public health personnel fifty-nine health officers, nine assistant health officers, nine epidemiologists, one county physician, two hundred and seventy-one public health nurses, one hundred and ten sanitation personnel, five dental officers, sixteen laboratory technicians, two bacteriologists, one hundred and fourteen clerks, and seven follow-up workers. There were twelve hundred and forty-nine weeks of dental service provided in counties and cities having full-time organized public health services, this dental service being available to these counties and cities through the Division of Oral Hygiene of the North Carolina State Board of Health.

An attempt has been made to improve the type of health service rendered in the local health units. Funds at our disposal have been used to add additional personnel in order that more adequate health service might be provided and the standard of the services be improved. Wherein the local people have been interested to the extent of being willing to make an appropriation toward financing a local service, we have coöperated. These developments have been made by inaugurating new health services on the county-unit plan or by the development of district health departments in those areas having low assessed valuations and sparsely settled communities.

The personnel of the Division has been active in rendering advisory and consultative service to the local health departments to aid in formulating their program to meet the local needs in the community. During the biennium the personnel of this Division made the following number of field visits to local health units:

Director	246
Consultant in Public Health Administration (since August 7, 1939).....	98
Consultant in Sanitary Engineering.....	251
Two Consultants in Public Health Nursing.....	368
Field Representative.....	199

Pertinent data relative to financial costs of local health departments is shown in Table No. 1-A and in Table No. 1-B.

The statistical record of work performed by types of services during the biennium in the seventy-six counties and five cities operating full-time health service on June 30, 1940, is recorded in Table No 2.

TABLE NO. 1-A—DATA ON FULL-TIME COUNTY, DISTRICT, AND

COUNTY, CITY OR DISTRICT	1930 Population	Date Organized	Total Budget	
			Amount	Per Capita
Alamance.....	42,140	1938	\$ 14,095.89	.335
Alleghany-Ashe-Watauga.....	43,370	1935-38	20,309.55	.468
Anson.....	29,349	1938	24,152.05	.823
Avery-Yancey.....	26,259	1935	14,885.40	.566
Beaufort.....	35,026	1923	12,189.95	.348
Bertie-Chowan.....	37,126	1934-37	18,462.85	.497
Biaden.....	22,389	1921	10,907.27	.487
Buncombe (exclusive of Asheville).....	47,744	1913	19,420.00	.407
Burke-Caldwell.....	57,426	1937	18,390.66	.320
Cabarrus.....	44,331	1919	16,351.12	.369
Catawba.....	43,991	1938	13,221.53	.300
Cherokee-Clay-Graham.....	27,426	1937	19,673.68	.717
Cleveland.....	51,914	1938	12,639.05	.243
Columbus.....	37,720	1921	13,318.69	.353
Craven.....	30,665	1921	13,783.32	.449
Cumberland.....	45,219	1919	29,288.33	.648
Currituck-Dare-Hyde-Tyrrell-Washington.....	37,229	1937-38	32,506.77	.873
Davidson.....	47,865	1917	14,130.16	.295
Duplin.....	35,103	1934	12,489.16	.356
Durham.....	67,196	1913	77,362.00	1.151
Edgecombe-Greene (exclusive of Rocky Mount).....	56,528	1919-37	31,276.71	.553
Forsyth-Stokes-Yadkin-Davie (exclusive of Winston-Salem).....	91,093	1913-31-38	79,639.29	.874
Franklin.....	29,456	1930	5,293.00	.180
Gaston.....	78,093	1928	35,434.69	.474
Granville.....	28,723	1919	13,135.99	.457
Guilford (exclusive of Greensboro and High Point).....	42,696	1911	17,870.00	.419
Halifax.....	53,246	1919	21,618.70	.406
Harnett.....	37,911	1936	14,179.54	.374
Haywood-Jackson-Macon-Swain-Transylvania.....	80,621	1934-36-37	45,005.67	.558
Hertford.....	17,542	1936	13,014.70	.742
Johnston.....	57,621	1937	15,134.90	.263
Lenoir.....	35,716	1917	13,981.60	.391
Martin.....	23,400	1938	13,661.54	.584
Mecklenburg (exclusive of Charlotte).....	45,296	1918	18,818.00	.415
Moore.....	28,215	1928	16,321.69	.578
Nash (exclusive of Rocky Mount).....	41,392	1915	15,421.23	.373
New Hanover.....	43,010	1913	49,489.08	1.151
Northampton.....	27,161	1917	22,918.60	.844
Orange-Person-Chatham.....	67,387	1935-37	48,940.74	.726
Pitt.....	54,466	1917	19,772.79	.363
Randolph.....	36,259	1927	13,249.05	.365
Richmond.....	34,016	1924	12,443.64	.366
Robeson.....	66,512	1912	28,958.99	.435
Rowan.....	56,665	1918	29,261.00	.516
Rutherford-Polk.....	50,668	1924-38	19,598.12	.387
Sampson.....	40,082	1913	16,022.66	.400
Stanly.....	30,216	1937	13,347.31	.442
Surry.....	39,749	1919	12,852.73	.323
Union.....	40,979	1938	13,942.62	.340
Vance.....	27,294	1920	12,103.34	.443

CITY HEALTH SERVICES—NORTH CAROLINA—FISCAL YEAR 1938-39

Source of Funds and Amounts						Whole-Time Personnel					
Local Appropriation	Per Capita	State Allotment	Per Capita	Other Agencies	Per Capita	Health Officer	Other Med. Officer	Nurse	Insp.	Clerk Other	Den. Wks.
\$ 7,060.00	.168	\$ 1,590.00	.038	\$ 5,445.89	.129	1		2	1	1	20
5,067.52	.117	4,520.00	.104	10,722.03	.247	1		3	2	3	40
8,676.05	.296	1,440.00	.049	14,036.00	.478	1	1	4	1	2	20
3,862.58	.147	2,960.00	.112	8,062.82	.307	1		2	1	2	20
6,821.00	.195	1,580.00	.045	3,788.95	.108	1		2	1	1	20
6,916.80	.186	3,446.00	.093	8,100.05	.218	1		3	1	2	25
5,264.00	.235	1,212.00	.054	4,431.27	.198	1		2	1	1	20
16,252.00	.340	1,440.00	.030	1,728.00	.036	1		2	2	1	36
8,900.00	.155	2,900.00	.050	6,590.66	.115	1		2	2	2	30
11,255.42	.254	1,590.00	.036	3,505.70	.079	1		2	2	1	32
7,182.00	.163	1,350.00	.031	4,689.53	.106	1		2	1	2	26
6,140.18	.224	3,090.00	.112	10,443.50	.381	1		3	2	3	30
5,927.08	.114	1,164.92	.022	5,547.05	.107	1		2	1	1	20
6,515.62	.173	1,352.00	.036	5,451.07	.144	1		2	1	1	20
7,836.38	.255	1,740.00	.057	4,206.94	.137	1		2	** 2	1	13
18,205.33	.403	1,440.00	.032	9,643.00	.213	1		6	1	et 3	25
10,145.11	.272	7,247.67	.195	15,113.99	.406	2		5	2	5	44
9,088.00	.190	1,370.00	.028	3,672.16	.077	1		2	1	1	20
6,910.00	.197	1,304.00	.037	4,275.16	.122	1		2	1	1	20
61,988.00	.923	1,440.00	.021	13,934.00	.207	1	3	14	6	edt 8	
16,626.71	.294	2,730.00	.048	11,920.00	.211	1		6	2	2	33
47,860.00	.525	4,958.00	.054	26,821.29	.295	2	1	17	2	etfu 7	30
3,900.00	.133	1,393.00	.047			1		1		1	
24,397.69	.312	1,440.00	.019	9,597.00	.123	1	1	6	1	efu 2	20
8,037.00	.280	1,690.00	.050	3,408.99	.118	1		2	1	1	20
14,630.00	.343	1,440.00	.034	1,800.00	.042	1		3	1	1	40
12,831.00	.241	1,840.00	.035	6,947.70	.130	1		5	2	1	20
7,947.16	.210	1,707.00	.045	4,525.38	.119	1		2	1	1	20
11,344.29	.141	8,300.00	.103	25,361.38	.314	3		7	3	et 6	56
6,381.35	.364	1,364.00	.078	5,269.35	.300	1		2	1	1	13
7,589.71	.132	1,707.00	.030	5,838.19	.101	1		2	1	1	20
8,505.35	.240	1,467.00	.041	3,949.25	.110	1		3	1	1	
7,575.83	.324	1,707.00	.073	4,378.71	.187	1		2	1	1	20
15,578.00	.344	1,440.00	.032	1,800.00	.039	1	cp 1	3	1	d 1	
8,780.00	.311	1,770.00	.063	5,771.69	.204	1		4	1	1	20
8,699.86	.210	1,653.00	.040	5,068.37	.123	1		3	1	1	20
44,996.16	.1046	1,830.00	.043	2,662.62	.062	1	cp 1	5	** 9	et 3	20
7,488.87	.276	1,302.00	.048	14,127.73	.520	1		6	1	1	
18,010.84	.267	5,530.00	.082	25,399.90	.377	3		6	** 4	5	54
12,958.00	.238	2,053.00	.038	4,761.79	.087	1		3	2	1	26
7,349.84	.203	1,241.00	.034	4,658.21	.128	1		2	1	1	30
7,799.00	.229	1,720.00	.051	2,924.64	.086	1		2	1	1	
14,474.99	.217	1,440.00	.022	13,044.00	.196	1		6	1	efu 2	
18,073.50	.319	1,440.00	.025	9,747.50	.172	1		6	1	2	34
8,080.00	.160	3,189.40	.063	8,328.72	.164	1		3	2	2	42
7,646.09	.191	1,827.00	.046	6,549.57	.163	1	cp 1	3	1	1	20
8,392.09	.278	1,640.00	.054	3,315.22	.110	1		2	1	1	20
6,775.83	.170	1,760.00	.044	4,316.90	.109	1		2	1	1	
7,000.00	.171	1,590.00	.039	5,352.62	.130	1		2	1	1	20
5,922.90	.217	1,167.00	.043	5,013.44	.183	1		2	1	1	

TABLE NO. 1-A—

COUNTY, CITY OR DISTRICT	1930 Population	Date Organized	Total Budget	
			Amount	Per Capita
Wake.....	94,757	1918	\$ 48,876.96	.516
Wayne.....	53,013	1920	27,270.00	.514
Wilkes.....	36,162	1920	10,623.23	.294
Wilson.....	44,914	1916	16,334.61	.364
TOTALS.....	2,400,377		\$1,193,390.15	.497
Asheville.....	50,193	1923	\$ 65,646.76	1.308
Charlotte.....	82,675	1918	107,436.50	1.300
Greensboro.....	53,569	1923	49,544.00	.925
High Point.....	36,745	1937	26,852.01	.731
Rocky Mount.....	21,412		20,094.00	1.359
TOTALS.....	244,594		\$ 278,573.27	1.139
GRAND TOTALS.....	2,644,971		\$1,471,963.42	.556

c—Clerk.

cp—County Physician. d—Dentist. t—Technician. b—Bacteriologist. fu—Follow-up Worker.

*—State allotment includes State Venereal Disease Funds for **drugs only**. ** One part-time Veterinarian.

Other Medical Officers include the following: Anson County—Epidemiologist. Durham County—1 Assistant Superintendent; 1 Epidemiologist; 1 Institutional Physician. Forsyth-Stokes-Yadkin-Davie—Syphilologist. Gaston—Epidemiologist. City of Asheville—School Physician. City of Charlotte—5 Clinicians. City of Greensboro—1 Clinic Physician; 2 Clinicians.

Continued

Source of Funds and Amounts						Whole-Time Personnel					
Local Appropriation	Per Capita	State Allotment	Per Capita	Other Agencies	Per Capita	Health Officer	Other Med. Officer	Nurse	Insp.	Clerk Other	Den. Wks.
\$ 37,036.96	.391	\$ 1,440.00	.015	\$ 10,400.00	.110	1		8	4	edtfu 5	
17,740.00	.335	1,440.00	.027	8,090.00	.152	1		6	2	2	20
5,492.00	.152	1,285.00	.036	3,846.23	.106	1		2	1	1	
11,209.78	.250	1,370.00	.030	3,754.83	.084	1		3	2	1	
\$ 677,203.87	.282	\$114,046.99*	.048	\$402,139.29	.167	60	9	201	88	103	1,099
\$ 49,643.76	.989			\$ 16,003.00	.319	1	1	12	6	cbtfu 6	36
95,216.50	1.152			12,220.00	.148	1	5	25	6	edbtfu 13	
37,041.00	.692			12,503.00	.233	1	3	8	2	edtfu 7	
17,875.00	.487			8,977.01	.244	1		5	** 3	et 2	20
24,551.00	1.147			4,543.00	.212	1		5	3	et 2	20
\$ 224,327.26	.917			\$ 54,246.01	.222	5	9	55	20	30	76
\$ 901,531.13	.341	\$114,046.99*	.043	\$456,385.30	.172	65	18	256	108	133	1,175

TABLE NO. 1-B—DATA ON FULL-TIME COUNTY, DISTRICT, AND

COUNTY, CITY OR DISTRICT	1930 Population	Date Organized	Total Budget	
			Amount	Per Capita
Alamance.....	42,140	1938	\$ 16,201.90	.384
Alleghany-Ashe-Watauga.....	43,370	1935-38	19,462.48	.449
Anson.....	29,349	1938	24,532.05	.836
Avery-Yancey.....	26,289	1935	14,462.93	.550
Beaufort.....	35,026	1923	11,495.95	.328
Bertie-Chowan.....	37,126	1934-37	18,108.30	.488
Bladen.....	22,389	1921	11,171.74	.499
Buncombe (exclusive of Asheville).....	47,744	1913	17,853.00	.374
Burke-Caldwell.....	57,426	1937	21,496.83	.374
Cabarrus.....	44,331	1919	30,955.00	.698
Catawba.....	43,991	1938	15,554.89	.354
Cherokee-Clay-Graham.....	27,426	1937	20,856.69	.760
Cleveland.....	51,914	1938	17,728.22	.341
Columbus.....	37,720	1921	13,588.62	.360
Craven.....	30,665	1921	13,907.24	.453
Cumberland.....	45,219	1919	30,980.39	.685
Currituck-Dare-Hyde-Tyrrell-Washington.....	37,229	1937-38	38,779.05	1.041
Davidson.....	47,865	1917	15,245.72	.318
Duplin.....	35,103	1934	13,192.54	.375
Durham.....	67,196	1913	87,051.00	1.295
Edgecombe-Greene (exclusive of Rocky Mount).....	56,528	1919-37	30,996.82	.548
Forsyth-Stokes-Yadkin-Davie (exclusive of Winston-Salem).....	91,093	1913-31-38	82,589.52	.906
Franklin.....	29,456	1930	5,880.00	.200
Gaston.....	78,093	1928	36,228.14	.463
Granville.....	28,723	1919	13,562.56	.472
Guilford (exclusive of Greensboro and High Point).....	42,696	1911	18,798.00	.440
Halifax.....	53,246	1919	24,219.93	.454
Harnett.....	37,911	1936	14,226.74	.375
Haywood-Jackson-Macon-Swain-Transylvania.....	80,621	1934-36-37	46,799.96	.580
Hertford.....	17,542	1936	13,799.85	.787
Johnston.....	57,621	1937	14,826.90	.257
Lenoir.....	35,716	1917	15,069.20	.422
Martin.....	23,400	1938	14,044.79	.600
Mecklenburg (exclusive of Charlotte).....	45,296	1918	18,016.00	.398
Moore.....	28,215	1928	15,689.10	.556
Nash (exclusive of Rocky Mount).....	41,392	1915	16,187.86	.391
New Hanover.....	43,010	1913	51,209.64	1.190
Northampton.....	27,161	1917	24,395.53	.898
Orange-Person-Chatham.....	67,387	1935-37	49,191.19	.729
Pitt.....	54,466	1917	22,521.50	.413
Randolph.....	36,259	1927	14,403.07	.397
Richmond.....	34,016	1924	11,652.26	.342
Robeson.....	66,512	1912	27,741.00	.417
Rowan.....	56,665	1918	28,530.00	.503
Rutherford-Polk.....	50,668	1924-38	25,393.00	.501
Sampson.....	40,082	1913	17,800.78	.444
Stanly.....	30,216	1937	14,374.40	.475
Surry.....	39,749	1919	14,763.50	.371
Union.....	40,979	1938	13,827.78	.337
Vance.....	27,294	1920	13,250.90	.485

CITY HEALTH SERVICES—NORTH CAROLINA—FISCAL YEAR 1939-40

Source of Funds and Amounts						Whole-Time Personnel					
Local Appropriation	Per Capita	State Allotment	Per Capita	Other Agencies	Per Capita	Health Officer	Other Med. Officer	Nurse	Insp.	Clerk Other	Don. Wks.
\$ 8,456.50	.201	\$ 1,392.00	.033	\$ 6,353.40	.150	1		3	1	1	20
6,839.66	.158	4,296.00	.099	8,326.82	.192	1		3	1	3	60
9,056.05	.309	1,392.00	.047	14,084.00	.480	1	1	4	1	3	20
3,632.21	.138	2,784.00	.106	8,046.72	.306	1		2	1	2	35
6,821.65	.195	1,392.00	.040	3,282.30	.093	1		2	1	1	20
7,020.00	.189	3,144.00	.085	7,944.30	.214	1		3	1	2	30
5,692.14	.254	1,104.00	.049	4,375.60	.196	1		2	1	1	20
14,685.00	.308	1,392.00	.029	1,776.00	.037	1		3	2	1	36
10,869.26	.189	2,400.00	.042	8,227.57	.143	1	* 1 ₂	2	2	2	30
18,543.00	.418	1,392.00	.031	11,020.00	.249	1	1	5	2	3	32
8,958.86	.204	1,392.00	.032	5,204.03	.118	1		2	1	2	26
6,991.23	.255	2,928.00	.107	10,937.46	.398	1		4	2	3	30
9,151.22	.176	1,262.00	.024	7,315.00	.141	1	* 1 ₂	4	1	1	20
7,175.89	.190	1,104.00	.029	5,308.73	.141	1		2	1	1	20
8,280.24	.270	1,392.00	.045	4,235.00	.138	1		2	** 2	1	13
19,687.39	.435	1,392.00	.031	9,901.00	.219	1	1	6	1	3	25
13,333.24	.358	7,860.00	.211	17,585.81	.472	3		5	2	5	44
9,990.32	.209	1,272.00	.026	3,983.40	.083	1		2	1	1	20
7,584.20	.216	1,104.00	.031	4,504.34	.128	1		2	1	1	20
66,442.00	.989	1,392.00	.021	19,217.00	.285	2	1	15	6	dtfu 10	
16,346.82	.289	2,634.00	.047	12,016.00	.212	1		6	2	2	33
50,860.58	.558	4,716.00	.052	27,012.94	.296	2	1	17	3	tfu 8	30
4,620.00	.157	1,260.00	.043			1		1			
24,397.69	.312	1,392.00	.018	10,438.45	.133	1	1	6	1	fu 3	20
8,414.46	.293	1,392.00	.048	3,756.10	.131	1		2	1	1	20
15,555.00	.364	1,392.00	.033	1,848.00	.043	1		3	2	1	40
13,862.93	.260	1,392.00	.026	8,965.00	.168	1		5	2	2	20
8,611.44	.227	1,392.00	.037	4,223.30	.111	1		2	1	1	20
14,733.59	.183	7,869.00	.097	24,206.37	.300	3		8	4	t 6	63
6,824.20	.389	1,104.00	.063	5,871.65	.335	1		2	1	2	13
7,509.00	.130	1,392.00	.025	5,925.90	.102	1		2	1	1	20
9,760.00	.273	1,272.00	.036	4,037.20	.113	1		3	1	1	10
7,150.25	.306	1,392.00	.059	5,502.54	.235	1		2	1	1	20
14,776.00	.326	1,392.00	.031	1,848.00	.041	1	ep 1	3	1	d 1	
8,900.00	.315	1,272.00	.045	5,517.10	.196	1		3	1	1	20
9,622.73	.232	1,392.00	.034	5,173.13	.125	1		3	1	1	20
46,019.54	1.070	1,392.00	.032	3,798.10	.088	2		5	** 9	t 4	20
8,761.13	.322	1,104.00	.041	14,530.40	.535	1		6	1	1	
13,932.66	.206	5,336.00	.079	29,922.50	.444	3		6	** 4	5	45
15,289.00	.281	1,392.00	.025	5,840.50	.107	1		4	2	1	26
8,163.47	.225	1,104.00	.030	5,135.60	.142	1		3	1	1	30
7,614.00	.224	1,272.00	.037	2,766.26	.081	1		2	1	1	
13,870.50	.208	1,392.00	.021	12,478.50	.188	1		6	1	fu 2	
16,041.18	.283	1,392.00	.025	11,096.82	.195	1		6	1	2	34
9,320.00	.184	2,760.00	.054	13,313.00	.263	1		5	2	2	42
8,597.15	.214	1,272.00	.032	7,931.63	.198	1		3	1	2	20
8,835.33	.292	1,392.00	.046	4,147.07	.137	1		2	1	1	20
7,944.50	.200	1,272.00	.032	5,547.00	.139	1		3	1	1	
7,375.78	.180	1,392.00	.034	5,060.00	.123	1		2	1	1	20
7,132.74	.261	936.00	.034	5,182.16	.190	1		2	1	1	20

TABLE NO. 1-B—

COUNTY, CITY OR DISTRICT	1930 Population	Date Organized	Total Budget	
			Amount	Per Capita
Wake.....	94,757	1918	\$ 60,106.33	.634
Wayne.....	53,013	1920	29,203.95	.550
Wilkes.....	36,162	1920	10,381.49	.287
Wilson.....	44,914	1916	17,390.76	.387
TOTALS.....	2,400,377		\$1,279,696.99	.533
Asheville.....	50,193	1923	\$ 64,885.50	1.293
Charlotte.....	82,675	1918	107,505.00	1.300
Greensboro.....	53,569	1923	51,518.00	.961
High Point.....	36,745	1937	26,551.50	.722
Rocky Mount.....	21,412		27,715.00	1.294
TOTALS.....	244,594		\$ 278,175.00	1.137
GRAND TOTALS.....	2,644,971		\$1,557,871.99	.589

cp—County Physician. d—Dentist. fu—Follow-up Worker. b—Bacteriologist. t—Technician.

*—One Epidemiologist in Burke, Caldwell and Cleveland Counties.

**—One part-time Veterinarian.

†—One Inspector six months only.

Continued

Source of Funds and Amounts					Whole-Time Personnel						
Local Appropriation	Per Capita	State Allotment	Per Capita	Other Agencies	Per Capita	Health Officer	Other Med. Officer	Nurse	Insp.	Clerk Other	Den. Wks.
\$ 41,244.33	.435	\$ 1,392.00	.015	\$ 17,470.00	.184	1	-----	9	4	dt 4	-----
17,766.45	.335	1,392.00	.026	10,045.50	.189	1	-----	6	2	2	20
5,583.59	.154	1,104.00	.031	3,693.90	.102	1	-----	2	1	1	-----
11,901.92	.265	1,272.00	.028	4,216.84	.094	1	-----	3	2	1	-----
\$ 726,551.05	.303	\$103,000.00	.043	\$450,145.94	.187	63	8	216	90	113	1,167
\$ 48,882.50	.974	-----	-----	\$ 16,003.00	.319	1	-----	12	6	dbtfu6	36
92,285.00	1.116	-----	-----	15,220.00	.184	1	1	25	† 6	btdfu15	-----
38,505.00	.719	-----	-----	13,013.00	.242	1	1	9	2	tfu 6	-----
19,375.00	.527	-----	-----	7,176.50	.195	1	-----	5	** 3	t 2	26
23,482.00	1.097	-----	-----	4,233.00	.197	1	-----	4	** 3	t 2	20
\$ 232,529.50	.910	-----	-----	\$ 55,645.50	.227	5	2	55	20	31	82
\$ 949,080.55	.359	\$103,000.00	.039	\$505,791.44	.191	68	10	271	110	144	1,249

**TABLE NO. 2—COMPILATION OF FULL-TIME LOCAL HEALTH
DEPARTMENT ACTIVITIES**
July 1, 1938 to June 30, 1940

	White	Colored	Indian	Total
A. COMMUNICABLE DISEASE CONTROL:				
1. Admissions to service.....	38,208	9,605	299	48,112
2. Consultations with physicians.....	3,809	403	2	4,214
Field Visits:				
3. Diphtheria.....	9,948	1,604	27	11,579
4. Typhoid fever and paratyphoid fever..	1,686	867	1	2,554
5. Scarlet fever.....	7,172	373	10	7,555
6. Smallpox.....	303	10		313
7. Measles.....	18,578	2,272	199	21,049
8. Whooping cough.....	13,220	3,882	103	17,205
9. Other (specify).....	13,556	2,452	35	16,043
Admissions to Hospitals:				
10. Diphtheria.....	233	49	2	284
11. Typhoid fever and paratyphoid fever.....	77	35		112
12. Scarlet fever.....	43	23		66
13. Smallpox.....	3	24		27
14. Other (specify).....	95	110		205
Immunizations (Persons Immunized):				
15. Smallpox.....	129,130	62,315	1,566	193,011
16. Diphtheria—under 1 year.....	15,529	7,670	173	23,372
17. Diphtheria—1 year through 4 years.....	37,808	17,391	533	55,732
18. Diphtheria—5 years and over.....	47,758	17,185	462	65,405
19. Typhoid fever.....	267,701	105,054	1,945	374,700
20. Other (specify).....	9,878	3,007	294	13,179
21. Public lectures and talks.....	210	67	1	278
22. Attendance.....	13,824	5,908	18	19,750
B. VENEREAL DISEASE CONTROL:				
1. Admissions to medical service.....	19,573	115,293	577	135,463
2. Cases transferred to private physicians.....	732	2,712	3	3,447
3. Clinic visits.....	249,792	1,498,518	6,396	1,754,706
4. Field visits.....	10,076	76,143	257	86,476
5. Other service (specify).....	14,070	43,923	256	58,249
6. Public lectures and talks.....	333	213		546
7. Attendance.....	23,590	20,397		43,987
C. TUBERCULOSIS CONTROL:				
1. Individuals admitted to medical service.....	33,351	17,793	319	51,463
2. Individuals admitted to nursing service.....	10,446	9,876	134	20,456
3. Physical examinations in clinics.....	16,503	6,933	322	23,758
4. X-ray examinations.....	32,355	16,826	317	49,498
5. Clinic visits.....	37,924	20,698	340	58,962
6. Visits to private physicians.....	1,335	601	3	1,939
7. Field nursing visits.....	29,419	30,381	373	60,173
8. Office nursing visits.....	4,839	1,596	158	6,593
9. Admissions to sanatoria.....	1,322	817	6	2,145
10. Other service (specify).....	15,458	6,892	1	22,351
11. Public lectures and talks.....	236	177		413
12. Attendance.....	24,414	17,693		42,107
D. MATERNITY SERVICE:				
1. Cases admitted to antepartum medical service.....	4,564	19,985	398	24,947
2. Cases admitted to antepartum nursing service.....	9,886	18,722	223	28,831
3. Visits by antepartum cases to medical conferences.....	11,505	49,560	583	61,648

TABLE NO. 2—Continued

	White	Colored	Indian	Total
D. MATERNITY SERVICE—Continued:				
4. Visits by antepartum cases to private physicians.....	1,472	1,523	92	3,077
5. Field nursing visits to antepartum cases.....	25,730	36,821	508	63,059
6. Office nursing visits by antepartum cases.....	5,254	16,390	66	21,710
7. Cases attended by nurses for delivery service.....	161	370	9	540
8. Cases given postpartum medical examination.....	1,011	3,314	29	4,354
9. Cases given postpartum exam. by private phys.....	374	292	4	670
10. Cases admitted to postpartum nursing service.....	7,443	12,919	194	20,556
11. Nursing visits to postpartum cases.....	21,091	28,265	363	49,719
12. Other service (specify).....	5,410	5,208	303	10,921
13. Midwives registered for formal instruction.....	2,397	9,407	91	11,895
14. Midwife meetings.....	268	803	4	1,075
15. Attendance at meetings.....	785	4,818	20	5,623
16. Visits for midwife supervision.....	2,157	10,191	66	12,414
17. Other service (specify).....	486	1,433	61	1,980
18. Public lectures and talks.....	154	370	—	524
19. Attendance.....	3,491	5,107	—	8,598
20. Enrollment in maternity classes.....	679	4,222	5	4,906
21. Attendance.....	1,433	6,174	7	7,614
E. INFANT AND PRESCHOOL HYGIENE:				
Infants:				
1. Individuals admitted to medical service.....	7,380	10,993	89	18,462
2. Individuals admitted to nursing service.....	18,456	20,205	336	38,997
3. Visits to medical conferences.....	22,137	25,340	118	47,595
4. Visits to private physicians.....	991	567	35	1,593
5. Field nursing visits.....	58,565	52,549	1,117	112,231
6. Office nursing visits.....	6,058	8,070	75	14,203
7. Other service (specify).....	756	643	—	1,399
Preschool:				
8. Individuals admitted to medical service.....	44,380	11,647	205	56,232
9. Individuals admitted to nursing service.....	19,956	12,600	477	33,033
10. Visits to medical conferences.....	56,544	18,377	201	75,122
11. Visits to private physicians.....	703	255	20	978
12. Field nursing visits.....	34,749	19,727	1,087	55,563
13. Office nursing visits.....	9,380	6,238	69	15,687
14. Inspections by dentists or dental hygienists.....	5,701	651	—	6,352
15. Prophylaxis by dentists or dental hygienists.....	1,458	1	—	1,459
16. Other service (specify).....	4,038	705	—	4,743
17. Public lectures and talks.....	169	115	2	286
18. Attendance.....	6,091	2,497	375	8,963
19. Enrollment in infant and preschool classes.....	413	705	33	1,151
20. Attendance.....	419	1,746	33	2,198
F. SCHOOL HYGIENE:				
1. Inspections by physicians or nurses.....	777,757	185,264	3,795	966,816
2. Examinations by physicians.....	122,992	30,619	1,766	155,377
3. Examinations by physicians with parents present.....	11,063	4,372	32	15,467
4. Individuals admitted to nursing service.....	32,894	9,292	160	42,346
5. Field nursing visits.....	49,552	16,946	260	66,758
6. Office nursing visits.....	16,839	2,919	93	19,851
7. Inspections by dentists or dental hygienists.....	240,478	55,494	544	296,516
8. Prophylaxis by dentists or dental hygienists.....	191,673	47,072	519	239,264
9. Other service (specify).....	118,815	43,602	1,435	163,852
10. Public lectures and talks.....	2,106	501	21	2,628
11. Attendance.....	136,961	41,626	4,392	182,979
12. Classroom health talks.....	12,254	4,779	164	17,197
13. Attendance.....	394,929	159,799	8,211	562,939

TABLE NO. 2—Continued

	White	Colored	Indian	Total
G. ADULT HYGIENE:				
Medical Examinations:				
1. Milk-handlers.....	5,120	2,095	-----	7,215
2. Other food-handlers.....	29,868	23,533	86	53,487
3. Midwives.....	448	1,330	12	1,790
4. Teachers.....	6,718	2,618	5	9,341
5. Other (specify).....	17,720	13,093	-----	30,813
H. MORBIDITY SERVICE:				
1. Admissions to medical service.....	16,860	10,798	62	27,720
2. Admissions to nursing service.....	9,729	6,493	75	16,297
3. Clinic visits.....	31,881	29,956	32	61,869
4. Field medical visits.....	5,858	3,352	9	9,219
5. Field nursing visits.....	35,683	22,756	197	58,636
6. Office nursing visits.....	7,623	7,822	4	15,449
7. Admissions to hospitals.....	6,885	4,687	95	11,667
8. Total patient-days of hospital service.....	65,403	42,533	295	108,231
9. Individuals admitted to dental service.....	12,033	3,674	1	15,708
10. Refractions.....	1,751	323	36	2,110
11. Tonsil and adenoid operations.....	3,769	682	9	4,460
12. Other service (specify).....	871	416	63	1,350
I. CRIPPLED CHILDREN SERVICE:				
1. Individuals admitted to medical service in clinics.....	4,484	1,408	84	5,976
2. Individuals admitted to nursing service.....	2,663	912	35	3,610
3. Visits to clinics.....	8,342	2,497	178	11,017
4. Nursing visits.....	5,951	1,884	139	7,974
5. Other service (specify).....	994	315	3	1,312
6. Public lectures and talks.....	126	48	-----	174
7. Attendance.....	1,409	12	-----	1,421
J. GENERAL SANITATION:				
1. Approved individual water supplies installed.....	2,886	498	10	3,419
2. New privies installed.....	43,680	11,293	80	55,053
3. New septic tanks installed.....	7,596	199	13	7,808
Field Visits:				
4. Private premises.....	193,001	96,074	388	302,777
5. Camp sites.....	4,560	534	16	5,110
6. Swimming pools.....	888	68	1	965
7. Barber shops and beauty parlors.....	390	137	-----	527
8. Schools.....	7,523	3,397	102	11,022
9. Public water supplies.....	5,256	977	22	6,255
10. Sewerage plants.....	7,049	3,691	62	10,802
11. Other (specify).....	28,444	34,511	-----	62,955
12. Buildings mosquito proofed.....	-----	-----	-----	67,748
13. Minor drainage--linear feet completed.....	-----	-----	-----	856,296
14. Anopheles breeding places eliminated.....	-----	-----	-----	14,936
15. Anopheles breeding places controlled.....	-----	-----	-----	13,392
16. Other service (specify).....	2	-----	-----	130,104
17. Public lectures and talks.....	261	95	5	367
18. Attendance.....	10,256	7,458	251	18,017
K. PROTECTION OF FOOD AND MILK:				
1. Food-handling establishments registered for supv.....	77,094	9,501	41	87,103
2. Field visits to food-handling establishments.....	108,170	15,595	288	124,053
3. Dairy farms registered for supervision.....	16,615	43	-----	16,676

TABLE NO. 2—Continued

	White	Colored	Indian	Total
K. PROTECTION OF FOOD AND MILK—Continued:				
4. Field visits to dairy farms.....	28,168	66	5	28,534
5. Milk plants registered for supervision.....	1,337	8		1,345
6. Field visits to milk plants.....	5,631	7	1	5,750
7. Cows tuberculin tested.....				59,253
8. Animals slaughtered under inspection.....				264,177
9. Carcasses condemned in whole or in part.....				61,686
10. Other service (specify).....				87,185
11. Public lectures and talks.....	95	3		98
12. Attendance.....	2,639	230		2,869
L. LABORATORY:				
Specimens Examined:				
1. Water—bacteriological.....				22,140
2. Water—chemical.....				9,892
3. Milk or milk products.....				27,761
4. Other food.....				143
5. Typhoid: blood cultures.....	168	98	3	282
6. Typhoid: Widal.....	359	146	3	686
7. Typhoid: stool cultures.....	1,856	1,466	3	3,371
8. Typhoid: urine cultures.....	107	63		255
9. Diphtheria cultures.....	14,056	3,337	76	19,699
10. Syphilis.....	175,503	277,751	1,523	471,348
11. Undulant fever (human).....	370	44		414
12. Bangs disease (animal).....				32,747
13. Typhus fever.....	61	12		73
14. Tularemia.....	19	6		25
15. Malaria.....	18,602	12,977	768	32,442
16. Gonorrhea.....	10,557	14,432	24	27,521
17. Tuberculosis.....	3,195	2,693	28	6,114
18. Feces for parasites.....	5,520	1,625	32	7,332
19. Urinalysis.....	25,786	56,586	939	87,137
20. Rabies.....				277
21. Other service (specify).....	8,281	2,779	1	14,900
M. REPORTABLE DISEASES:				
Anthrax (20).....	1			1
Chickenpox (44a).....	3,695	567	38	4,300
Diphtheria (10).....	2,506	370	7	2,883
Dysentery (13).....	5	9		14
Gonorrhea (35).....	1,425	2,488	33	3,946
Hookworm (40).....	133	4	4	141
Influenza (11).....	1,061	91		1,152
Malaria (38).....	231	101	3	335
Measles (7).....	5,777	952	133	6,862
Meningococcus meningitis (18).....	33	8		41
Ophthalmia neonatorum (35).....	4	14		18
Pellagra (62).....	229	85	20	334
Pneumonia (107-109).....	302	75		377
Poliomyelitis (16).....	29	8	1	38
Puerperal septicemia (145).....				
Rabies in man (21).....	1			1
Rabies in animal.....				58
Scarlet fever (8).....	2,883	93		2,976
Smallpox (6).....	10	94		104
Streptococcal sore throat (115a).....	94	2		96
Syphilis (34).....	4,294	27,610	134	32,037
Trachoma (88).....	6	7	2	15

TABLE NO. 2—Continued

	White	Colored	Indian	Total
M. REPORTABLE DISEASES: <i>Continued:</i>				
Tuberculosis (23-32)	1,220	1,137	25	2,382
Tularemia (44c)	17	4		21
Typhoid fever (1)	171	96	1	268
Typhus fever (3)	78	6		84
Undulant fever (5)	9	2		11
Whooping cough (9)	5,125	1,980	37	7,142

SUPPLEMENTAL REPORT

July 1, 1938 to June 30, 1940

N. POPULATION:				
1. Under one year	46,944	18,996	445	66,385
2. Under five years	241,237	99,138	2,261	342,636
3. Five to nine inclusive	257,056	112,700	2,743	372,499
4. Ten to fourteen inclusive	228,195	102,033	3,277	333,505
5. Fifteen and over	1,245,210	536,889	7,853	1,789,952
6. Number of practicing physicians	2,522	141		2,663
7. Number of practicing dentists	720	80		800
8. Number of practicing midwives	500	1,800		2,300
O. VITAL STATISTICS:				
1. Live births	78,336	36,944	1,413	116,693
2. Still births	1,747	1,638	22	3,407
3. Deaths under one year	3,020	2,186	57	5,263
4. Deaths under one month	2,312	1,364	38	3,714
5. Puerperal deaths	195	135		330
6. Total deaths	29,380	16,939	291	46,610
Communicable Disease Deaths:				
7. Typhoid and paratyphoid fever	38	20		58
8. Measles	24	7		31
9. Scarlet fever	53	326		379
10. Whooping cough	65	88		153
11. Diphtheria	152	45	1	198
12. Tuberculosis—all forms	807	1,374	4	2,185
13. Diarrhea and enteritis under two years	278	246	11	535
14. Number vital statistics visits	4,351	2,851		7,202
P. COMMUNICABLE DISEASE CONTROL:				
1. Schick negative (under age 10)	51,883	7,331	891	60,105
2. Schick positive (under age 10)	11,486	2,328	87	13,901
3. Tuberculin negative (under age 20)	93,229	33,812	417	127,458
4. Tuberculin positive (under age 20)	19,343	10,477	90	29,910
5. Tuberculosis patients in Burr cottages	54	97		151
6. Attendance preventoria and open air classes	364	58		422
7. Specimens collected for darkfield negative	212	562		774
8. Specimens collected for darkfield positive	82	616		698
9. Syphilis treatments	194,623	1,347,730	4,699	1,553,368
10. Gonorrhea treatments	24,931	42,881	188	68,000
11. Chancroid treatments	242	1,629		1,871

TABLE NO. 2 SUPPLEMENTAL REPORT—Continued

	White	Colored	Indian	Total
Q. INFANT, PRESCHOOL, AND SCHOOL HYGIENE:				
1. Children referred for medical care.....	152,912	38,141	657	191,710
2. Children with defects corrected.....	51,002	8,700	515	60,217
a. Teeth.....	98,980	18,788	439	118,207
b. Tonsils.....	13,078	1,343	53	14,474
c. Eyes.....	5,813	717	11	6,541
R. GENERAL SANITATION:				
1. Sewer connections, new.....	5,608	768	27	6,565
2. Sewer connections, restored.....	1,383	1,063		2,461
3. Complaints investigated.....	23,306	7,111	34	30,627
4. New water connections.....	3,574	736		4,310
S. GENERAL PUBLIC HEALTH INSTRUCTION:				
1. Newspaper articles published.....				7,685
2. Circular letters sent out.....	169,849	72,801	2,841	248,525
3. Bulletins, posters distributed.....	336,937	173,939	2,575	514,405
4. Health exhibits, special demonstrations.....	4,755	782	45	5,582
	Health Officer	Nurse	Sanitarian	Total
T. ADMINISTRATION:				
1. Staff conferences.....	2,635	4,534	1,799	2,650
2. Meetings with official bodies.....	2,654	1,150	983	4,787
3. Court proceedings instituted.....	675	107	805	1,662
4. Meetings with non-official bodies.....	2,337	2,392	805	5,534
5. Conferences with officials.....	20,481	21,511	21,533	63,525
6. Conferences with physicians.....	16,895	24,978	2,920	44,793
7. Other conferences.....	71,637	134,449	103,915	310,001
8. Visits to schools.....	11,507	55,304	6,075	72,886
9. Hours in office.....	134,030	304,917	87,748	426,695
10. Hours in field.....	130,937	615,359	301,727	1,048,023
11. Miles traveled.....	990,234	2,732,484	1,670,149	5,292,867
12. Not-home visits.....	2,428	38,185	11,358	51,971
13. Days off duty.....	1,539	6,117	2,125	9,781

MONTHLY REPORT OF COUNTY PHYSICIAN

July 1, 1938 to June 30, 1940

	White	Colored	Indian	Total
1. No. of treatments or examinations given at home.....	5,276	3,020	-----	8,296
2. No. of home visits.....	7,033	4,803	-----	11,836
3. No. of treatments or examinations given in office.....	27,645	34,447	89	62,181
4. Total visits under (3) to office.....	34,343	50,157	80	84,580
5. No. of visits to county jail.....	-----	-----	-----	10,316
6. No. of treatments or examinations given in county jail..	13,595	12,904	151	26,650
7. No. of visits to county home.....	-----	-----	-----	8,612
8. No. of treatments or examinations given in county home	18,402	12,014	128	30,544
9. No. of visits to County T. B. Hospital.....	-----	-----	-----	2,255
10. No. of treatments or examinations given in County T. B. Hospital.....	2,774	2,320	3	5,364
11. No. of completed anti-rabic treatments.....	235	27	7	269
12. No. of treatments, hookworm.....	484	128	9	621
13. No. of examinations, prisoners.....	5,888	5,427	203	11,518
14. No. of examinations, teachers.....	3,297	1,034	-----	4,331
15. No. of examinations, child for industry.....	5,248	714	1	5,963
16. No. of examinations by court order.....	333	148	1	482
17. No. of examinations for admission to institution.....	1,067	538	13	1,618
18. No. of examinations for lunacy.....	902	694	6	1,602
19. No. of examinations, postmortem.....	573	322	1	896

DIVISION OF INDUSTRIAL HYGIENE

The diverse character of activities undertaken during the biennium is attested by investigations ranging from copper mining in the mountains, cigarette plant stemmery at Durham, to peanut threshing in the east. And, although these studies involve siliceous dusts, which were indicated in the previous biennial report as constituting the most extensive occupational disease hazard in the state, other investigations were made to evaluate exposure to organic solvents, irritating chemicals, and worker distress attributable to poor air quality and lack of air movement. The manifold endeavors of the Division truly covered the span of life from young manhood to the grave in that numerous preemployment examinations were made to determine the new worker's fitness for the job, and autopsies were performed to substantiate ante mortem diagnoses.

An outstanding contribution to industry during the biennium has been the exhaust ventilation work of the Division. Upon request, field research involving the design and operation of experimental hoods for the exhaust ventilation of large granite surfacing machines was undertaken in one of the cutting sheds of a plant (more than 100 employees) specializing in structural stone. Placed at the disposal of Division personnel was a cutting shed containing an exhaust fan and exhaust duct connections suitable for experimental work. Several hoods were designed, modified, and operated with and without accessory attachments under variations in air flow. This work revealed the type of hood and appurtenant air flow characteristics most suitable for safeguarding the health of granite surfacing machine operators. The results are widely applicable. The data obtained in this study were incorporated into the design of a complete exhaust ventilation system, including dust collector and air filter, to serve six machines. Following the installation of the system an evaluation of it revealed a reduction of dust to non-hazardous concentrations.

In addition to the above, an exhaust ventilation system was designed for the casting cleaning department of a foundry at Winston-Salem. Dust counts and air flow measurements have indicated the system to be satisfactorily controlling the occupational disease hazard. Two complete exhaust ventilation systems were designed for a large foundry at Goldsboro to serve the iron casting cleaning and brass products departments, respectively. Complete layouts were likewise designed for feldspar and pyrophyllite milling plants, but at the close of the biennium the systems had not been installed, although money had been appropriated for one of them. Other services include the design of an exhaust ventilation layout for a small foundry, the exhaust ventilation of a bagging machine at a small mineral grinding plant, plans for a cyclone dust collector for another foundry, and dust houses designed for small exhaust ventilation systems generally and for a seed cleaning plant.

In the category of outstanding developments has been the coöperation of the Division with local and district health officers in the evaluation of industrial environments. The coöperative enterprises involved dust exposures attending peanut harvesting in Washington County, feed grinding and compounding in

Nash, carbon tetrachloride exposures in a cotton mill in Alamance, and a very puzzling neuro-circulatory syndrome affecting 60 furniture plant workers in Lenoir County.

There were 110 mule spinners in 6 woolen mills examined for scrotal cancer by an eminent dermatologist of the United States Public Health Service and the Director of the Division. Many cases of folliculitis of the thigh and a few cases of keratoses were found but no scrotal cancer. Two plug tobacco plants were visited in company with a Public Health Service physician interested in skin diseases. Other dermatoses cases were investigated by the Division Director; these involved a textile worker at each of two mills. A moulage cast was made of the lesions in one case for display in the permanent exhibits in the Health Building.

Clinical examinations and X-ray films of the chest were made for 3,314 prospective and routine employees in the siliceous dust industries of the state. The group of persons examined included 324 employees of the asbestos textile mills in Mecklenburg County who were reexamined after three years and a group of 20 former asbestos textile plant workers. It was noted that there had been no significant changes in the medical findings between examinations. In the case of employee reexaminations, the lack of progression of such pathology as was in evidence at the first examinations may reflect the efficiency of dust control devices that have been extended and improved since the original study was made. The medical examinations include four that were made especially for evidence in connection with compensation litigation, one involving granite dust, two copper mine dust, and one pyrophyllite mine dust.

Claimants for compensation were responsible for other medical activities. There were 21 detailed medical reports prepared, 3 of which involved asbestosis; 13, silicosis; 3, pneumoconiosis; 1, carbon disulphide poisoning; and 1, volatile paint and lacquer solvents. Medical testimony was given at 10 compensation hearings; both medical and engineering testimony at one; and only engineering at one. Required also in this connection were two autopsies. The Medical Director assisted in arranging and was present at the autopsy of a former asbestos textile plant worker and made all arrangements for and performed an autopsy on a former foundry worker.

The compensation case involving the autopsied former asbestos textile worker was directly responsible for a comprehensive statistical study of the occurrence of respiratory diseases in the industry. In order to obtain the needed data, as many of the workers originally examined as could be contacted were re-questioned after a lapse of three years or more. There were 325 persons involved, 273 who were unaffected and 52 who had asbestosis. The study indicated that the incidence of pulmonary disorders, other than asbestosis, were no more prevalent among the affected workers than among those who exhibited no symptoms of dust exposure. In other words, exposure to asbestos dust apparently does not predispose workers to other respiratory maladies.

A major activity of this biennium was the study of the health of workers in the brick and tile industry. All of the data contained on the case record forms for 1,555 employees were coded for punch card analysis. In addition, each case record and its accompanying X-ray film were reviewed critically. This study revealed that, although the workers are exposed to siliceous dusts, the occupational disease hazard in the brick and tile industry is not acute.

There was found no pulmonary pathology that could be attributed to the inhalation of brick plant dusts.

A departure from established practice occurred during the biennium when for the first time a study of a major industry was begun in which the principal occupational disease hazards are not siliceous dusts. Information with respect to occupational classification, number of employees, and substances handled was collected in 96 furniture plants for approximately 13,000 workers. In the finishing department of every furniture plant workmen are exposed to volatile solvent fumes from lacquers, stains, and other finishing materials. Some of the volatile compounds are definitely injurious to health. At the close of the biennium there had been compiled a classification by manufacturer of the information on finishing materials, and letters had been dispatched to the producers thereof requesting the formulation of the products listed.

An engineering appraisal of the extent of the dust hazard was made in brick and tile plants, pyrophyllite mines and mills, granite cutting sheds, asbestos textile plants, feldspar mills, a kaolin recovery operation, a textile machinery manufacturing plant, a copper mine, foundries, granite and limestone quarries, a mirror plant, a stemmery in a large cigarette plant, a washboard plant, a feed grinding mill, peanut threshing, a mica grinding mill, a quartz mill, and a cotton mill. There were 71 visits made to virtually as many different operations for the collection of dust samples. On these 71 visits to industrial operations there were 407 impinger and 50 konimeter samples collected for particle counts, 17 Owens Jet samples for particle size measurements, and 9 gross samples of directly collected and settled atmospheric dust obtained for analysis.

Other workroom studies involving hazards other than siliceous dusts were made in one cotton mill to evaluate a carbon tetrachloride exposure, in another to appraise the extent of a chemical dust hazard, and in a third to determine the cause of an alleged "suffocating" environment. Possible hazards involving the handling of addressograph plates were also investigated.

Visits were made to 28 plants solely for the purpose of promoting and discussing dust control measures and to 43 additional establishments for information, inspection, or both. Many of these visits were made when en route to some special investigation or when opportunity afforded while making a previously planned study. Some not previously mentioned industries included in the inspectional work were a hosiery mill, a wood pulp plant, a chair company, a cyanite recovery operation, and a manganese mine.

The extensive field activities entailed much laboratory work. Virtually all of the 407 impinger samples collected for particle counts and some of the konimeter samples were analyzed in field laboratories set up in municipal water plants, hotel rooms, and in local health departments. In the Division offices in Raleigh and in the laboratories at State College much additional work was performed. There were 5,782 particle size measurements made on the 36 Owens Jet samples; 26 gross samples of dust were analyzed petrographically for free silica; and 23 samples of miscellaneous atmospheric impurities analyzed chemically. Much other incidental laboratory work was performed. A field sampling outfit, with carrying case, was constructed for the carbon tetrachloride investigation. Field equipment also was devised for

the evaluation of a chlorine exposure and the study of a lead smelter smoke problem. Equipment was calibrated frequently at both places.

There were many reports prepared incident to the field and laboratory activities, some of which were extensive. The copper mine study was presented in an illustrated 30-page manuscript. A summary of the brick and tile plant investigation prepared for the executive secretary of their association required 15 pages, and other comprehensive reports were employed to present the results obtained in studies of an asbestos textile plant, a cotton mill dust hazard, a cotton mill chlorine exposure, and a wood pulp mill. There were monthly, quarterly, annual, and biennial reports of Division activities prepared. A recapitulation was made of the engineering data collected in the continuing study of the granite cutting industry. In addition, at least 28 memorandum reports were made of plant visits.

As a result of the many contacts with industry, it appeared desirable to prepare from time to time certain educational matter for distribution. Accordingly, there were written during the biennium the following:

1. "The Control of Dust in Small Granite Cutting Sheds."
 - a. Suggestions for Utilizing Prevailing Winds for the Reduction of Atmospheric Dust in Small Granite Cutting Sheds.
 - b. Suggestions for the Construction of a Dust-tight Sand Blast Cabinet.
 - c. Respirators Approved for Protection Against the Inhalation of Mineral Dusts: Their Use and Maintenance.
2. "Information Memorandum for the Furniture Industry Relative to Respirators for Protection Against the Inhalation of Certain Atmospheric Contaminants."
3. "Respiratory Disturbances Suffered by Cardroom Workers Attributed to a Protein in Cotton Dust." A Review of a British Publication and a Report of Some North Carolina Experiences.
4. "Suggestions for the Prevention of Heat Cramps (Monkeys)."
5. "Bathing, An Industrial Safeguard."
6. "Safety Check List for Paint Spraying Booths and Enclosures."
7. "Information Memorandum on the Use of Aluminum Dust to Prevent the Development of Silicosis: Prepared as a Result of the Publication in the June 3, 1939, Issue of *Collier's Magazine* of an Article Entitled 'Dust Fights Dust,' June 6, 1939."

Although prepared during the preceding biennium, the report "Summary of Results Obtained to Date in a Study of the Occupational Disease Hazards Associated with the Quarrying, Crushing, and Screening of North Carolina Granites" was distributed during the present period. The tentative draft of a report presenting the results of a study to determine the effects of exposure to dust in the mining and milling of pyrophyllite, which was summarized in the last biennial report, was reviewed. The medical section was rewritten and a section on dust control added. The report was published during the first year of the present biennium.

The Division provided speakers for several National and State meetings and for local groups. The subjects discussed and the respective groups involved are listed as follows:

"The Foundry Dust Hazard and Its Control" in Pittsburgh at the meeting of the American Public Health Association.

"Pyrophyllite Dust: Its Effect and Control" in New York at the meeting of the American Institute of Mining and Metallurgical Engineers.

"The Health of North Carolina Brick and Tile Workers" absentia in Toronto at the meeting of the American Ceramic Society.

"Health Hazards in Spray Painting" and "Safety in the Home" in Raleigh at the 10th Annual State-wide Safety Conference.

In addition to the above, talks and lectures were presented before the following: student nurses at Rex Hospital, Raleigh (2) and class from William and Mary University; Ceramic Society, State College; civic clubs at Mt. Airy, Liberty, and Hemp; social science classes from the University of North Carolina (4); health officers (2); class in sanitation, University of North Carolina; public health trainees at the University (3); medical students at Wake Forest College; county medical societies (2); and radio talks (9).

National publications carried articles by Division personnel. "Pre-employment Examinations and Related Activities of the North Carolina Division of Industrial Hygiene" appeared in the April 1940 issue of the *Journal of Industrial Medicine*, "Card Room Fever" in the March 1940 issue of *The Textile World*, and "Pyrophyllite Dust: Its Effect and Control" in the May 1940 issue of *Mining Technology*.

During the biennium distinguished visitors came to the Division from Detroit, Arkansas, Los Angeles, the Phillipines, Hawaii, Oklahoma, Utah, Vermont, India, and Turkey.

Information was supplied by correspondence in answer to four requests relative to lead poisoning, one on the paint hazard in a railroad shop, one on chronic cyanide poisoning, two relating to seed cleaning dust, and others relative to auto paint spraying, the use of lead paint in a mirror plant, lye poisoning, paint spraying enclosures, the foundry dust hazard, and on miscellaneous subjects to casualty underwriters. The State Dry Cleaners Commission was provided with information relative to health hazards, and the Idaho State Board of Health was furnished information relative to the North Carolina X-ray and engineering equipment.

Other miscellaneous work included the design and assembly of exhibits. A portable exhibit was designed, assembled, and exhibited at five county fairs and the State Fair. A previously assembled exhibit was displayed in Goldsboro on the occasion of Hospital Day and at Pinehurst during the contiguous meetings of the State Public Health Association and the State Medical Society. Exhibits depicting sanitary and insanitary well water supplies were constructed for permanent display in the Health Building. Various safety practices pamphlets were reviewed critically upon request for the National Safety Council. Beginning early in the second year of the biennium contributions were made monthly to the Industrial Commission's *Safety Bulletin* and to the National Safety Council's Textile Safety.

The personnel of the Division consisted of a medical director, an X-ray technician, two industrial hygienists, and a secretary. During perhaps a fourth of the biennium an additional physician increased the personnel to six.

The major activities are summarized as follows:

Persons examined clinically and radiographically.....	3,314
Blood specimens collected for serological tests for syphilis.....	2,780
Autopsies performed (1) and attended (1).....	2
Special clinics held involving compensation litigation.....	3
Compensation hearings at which expert testimony provided	11
Detailed medical reports re compensation claimants.....	21
Impinger samples of dust collected for particle counts.....	407
Konimeter samples of dust collected for particle counts.....	50
Owens Jet samples of dust collected for particle size measurements	17
Dust particles measured.....	5,782
Number plants involved in dermatological investigations.....	10
Number plants visited with reference to neuro-circulatory syndrome of 60 workers.....	3
Number plants visited for dust samples.....	71
Number plants visited relative to dust control.....	28
Number plants visited for occupational analysis and inspection....	43
Additional plants visited in furniture survey.....	96
Number workers involved in furniture survey.....	13,000 ±
Mule spinners examined in 6 woolen mills for scrotal cancer.....	110
Miscellaneous workroom studies.....	4
Exhaust ventilation systems designed.....	7
Dust samples analyzed petrographically.....	26
Samples of atmospheric impurities analyzed chemically.....	23
Number comprehensive reports of workroom studies.....	7
Number memorandum or routine plant reports prepared.....	28
Number monthly, quarterly, annual, and biennial reports prepared	35
Papers, talks, and radio broadcasts.....	34
Articles published in national journals.....	3
National meetings at which papers presented.....	3
Information circulars issued.....	7

SCHOOL HEALTH COORDINATING SERVICE

Regular readers of this report are doubtlessly familiar with the sustained efforts of Doctor Cooper, in cooperation with the state and local education authorities, during the past quarter century to develop an effective health service in the public schools of North Carolina. Those who have kept in touch with these developments could not have failed to appreciate, and to be impressed by, the remarkable progress that was made as well as the magnitude of this important problem. What may not have been sufficiently stressed, however, is the fact that this work represented only a part of the enormous burden with which Doctor Cooper, as Director of the Division of Preventive Medicine, has had to cope. With the augmentation of the activities of the Division of Preventive Medicine in 1936, occasioned principally by state adoption of the Federal Social Security program, it became apparent that it would be impractical, if indeed not impossible, for a single director to assume effective leadership in all of the fields of work consolidated at that time under the Division of Preventive Medicine. Moreover, the feeling was shared by the State Departments of Health and Education that the maintenance of healthy child life throughout the state was a problem of sufficient magnitude and importance to warrant the establishment of an organization which would give its entire time and attention to school health.

With this objective in mind, a plan approved by the State Superintendent of Public Instruction and the State Health Officer was submitted to the Rockefeller Foundation and the General Education Board with a request for financial assistance. The outcome was that these Rockefeller Boards made a supplementary grant of \$50,000, to be expended over a five-year period, commencing July 1, 1939. During this period an effort will be made to integrate more closely the services being rendered in behalf of the health of the school children of North Carolina.

The approved plan called for the setting-up of a small coordinating organization to represent the interests of the state departments of health and public instruction and to be jointly responsible to the directors of these two departments. This coordinating organization consists of an advisory committee and a full-time operating staff. In addition, the Rockefeller Foundation assigned a member of its field staff to serve temporarily as administrative adviser. The advisory committee is composed of two ex-officio members, representing the State Department of Public Instruction and the State Department of Health, respectively, and three appointive members representing, respectively, the State Medical Society, the State Teacher Training institutions, and Physical Education Interests. The functions of this committee are to act in an advisory capacity to the coordinator, and its individual members are expected to guide and assist him as technical experts in the formulation and execution of a unified school health program.

What now is known officially as the North Carolina School Health Coordinating Service was organized during the early months of the fiscal year 1939-40. By the end of September, 1939, a full complement of trained employees had been engaged and active field work had been inaugurated. The staff, which

serves on a full-time basis, comprises: a coördinator (director), a nutritionist, a physical education adviser and an assistant, a white nurse, a Negro physician, and a Negro health education worker. In addition to these regular staff members, the services of several nurses from the Division of Preventive Medicine were assigned work with this group for varying periods of time.

The scope of the activities being undertaken by the School Health Coördinating Service does not include the performance of duties for which local education or health personnel are responsible. Four principal objectives are being sought: (1) adequate provisions in the teacher-training institutions to train teachers to teach health, and the provision of facilities for giving similar training to in-service teachers in the public schools; (2) provision in elementary and high schools for the teaching of scientific facts concerning health and practical methods of applying this knowledge in the everyday lives of the pupils—this to include both subjective and objective teaching—the aim being to have pupils “practice today what they learned yesterday, with the hope that it will become a habit tomorrow”; (3) The application of protective health measures by the school health personnel in such a way as to take advantage of every opportunity for objective teaching; and (4) extension of these teachings and practices into the homes of the pupils through coöperation with parents and with civic organizations in the various communities. In the realization of these aims, the purpose of the coördinating service is to help mobilize existing facilities which, through careful planning, will make possible the execution of an effective program with the available local personnel. The attitude of the central operating agency will be that health education and health service in the public schools constitute a coöperative enterprise, and that the establishment of a unified, well integrated program that will meet the essential needs of various localities will be a service of inestimable value to the entire state. In developing such a program, it is intended that this attitude shall pervade throughout and that the end product shall not be a plan *ready made* by the coördinating service, but one in which all participating agencies assisted in maturing, due consideration having been given to local problems. Moreover, it is expected that the program shall be elastic and that constant attention shall be given to possible revisions in the light of experience or the acquisition of newer knowledge.

After the acquisition of the trained personnel provided for in the budget, intensive operations were undertaken during the school session 1939-40 in five counties, namely, Stanly, Person, Orange, Chatham, and Wayne counties. The combined populations (1930 census) of the counties was 150,616; the total number of white and colored schools 199; total teachers 1,224; and the total pupils enrolled, 39,428.

No doubt it is realized rather generally that health instruction, like all other instruction given pupils in the public school system, should be administered by the regular classroom teachers. Furthermore, it is a recognized fact that by no means all of the classroom teachers have been trained to teach health as effectively as they have to teach most other subjects contained in the curricula. Consequently, as stated above, one of the important concerns of this organization has been to formulate plans to correct this deficiency.

By way of working out satisfactory plans to impart health training to in-service teachers, and, perhaps, eventually to establish sound courses in

health instruction under the egis of the Public Health School at Chapel Hill, the General Education Board awarded \$4,700, in addition to its contribution to the regular budget, for free health instruction to selected teachers during the summer of 1940. This award, however, was made by the General Education Board strictly without any future commitments on the Board's part.

Following the above-mentioned award, 30 in-service teachers from the white schools and 30 from the Negro schools in the five counties in which field work has been undertaken during the 1939-40 session were selected to undergo health training at the University of North Carolina and the North Carolina College for Negroes, respectively. Stipends, covering practically the entire expense involved, were granted each teacher selected, and courses extending over a period of six weeks were conducted.

In connection with the Health Education Courses offered at the University of North Carolina and the North Carolina College for Negroes, a summer health school was held for malnourished children. At each place about 22 children were chosen by a physician from a much larger group which had been selected by the nurses. The children were put under a hygienic regime set up to conform as nearly as possible to natural home conditions. They were brought in at 8:00 o'clock each morning, Monday through Saturday, and taken home at 5:30 in the afternoon. During the day they had three full meals, a morning and afternoon rest period on cots, a one-hour swimming period, crafts, and various outdoor activities. Each child was given a thorough physical examination, a rather extensive blood study, urine and stool examinations, and a complete dental checkup, including cleaning, fillings and extractions where indicated. Anterio-posterior and oblique X-ray pictures were made of all chests.

Each class was under the direction of a full-time teacher. The summer school fellowship teachers studied the children carefully and followed their progress. The children were weighed regularly and, with three exceptions, showed a gain in weight of from one to seven pounds, with an average increase of approximately three pounds. Marked improvements were noted in physical vigor, mental alertness, and general attitude. The time was too short to show much improvement in the blood pictures. One case of primary tuberculosis was detected and the child was sent to the State Sanatorium.

About half of the food used was furnished by the Surplus Commodities Corporation, the Home Demonstration Clubs, and the Evaporated Milk Association. The remainder was supplied from the General Education Board grant. Both lunchrooms were under the supervision of our nutritionists, and at each institution a full-time voluntary assistant, trained in Home Economics, was in immediate charge of the lunchroom. All commodities purchased were bought wholesale from merchants offering the best prices. Actual food costs chargeable to our special budget, averaged about 9c per child per day, but, when calculated on the basis of retail prices, including the foods furnished by the above mentioned donors, the cost per child per day was approximately 19c. During the course of the summer health school and up to the present time numerous home visits have been made, and the coöperation of parents was solicited. Almost without exception parents displayed great interest and willingness to carry on the work in the home. Many of them asked for the recipes and menus

used, and asked various questions concerning balanced diets, child feeding, and low cost foods.

A short moving picture, built up around the activities of each group was made, and since the close of the school, these have been shown in the communities where the children live. Attendance was excellent and much interest in better nutrition was displayed. Without exception, every child expressed a desire to return next summer in case another summer health school should be held.

ANNUAL REPORT NORTH CAROLINA STATE BOARD OF HEALTH

To

CONJOINT SESSION STATE MEDICAL SOCIETY

CARL V. REYNOLDS, M.D.
Secretary and State Health Officer
May 13, 1939

Your State Department of Health is the agency that submits budgets to the Federal Government for North Carolina's proportional part of its allotment of funds, and the same agency controls and directs the expenditure of funds coming into the state. This department has endeavored to direct all moneys to the best advantage of the people served, mindful always of the medical profession.

This agency undoubtedly has played a part in the prevention of registration and contributed toward preserving the ideals and standards of the medical profession.

Believe it or not—like it or not—we must face facts and set ourselves to guide the “ship of state” to a safe landing!

I hold in my hand the annual Conjoint Report which is required by law that the Secretary submit to this body at its annual meeting. It is of necessity, voluminous, and will not be read in its entirety, but filed for record, with the hope that you will study it at a more opportune time in that you may acquaint yourself with its vast proportions, and value to our commonwealth.

Under the provisions of Title VI of the Social Security Act, the U. S. Public Health Service has allocated since 1936 to all the states something more than \$27,000,000, and in addition \$2,400,000 for syphilis. The syphilis fund has been increased this year to \$5,000,000. From the Children's Bureau \$2,800,000 per year has been allocated to the states for crippled children work and \$3,800,000 to maternity and infancy work, making a grand total for the three years of \$53,150,000.

Surgeon General Parran of the U. S. Public Health Service says, referring to the \$27,000,000 “these funds have not replaced state and local funds for public health. On the contrary, they have stimulated added interest and appropriations. Of the \$45,000,000 of funds from state and local funds since 1936, \$13,000,000 represents additional appropriations.”

This is a mere bagatelle when we think of the vast sums being spent by other agencies—for malaria control drainage projects; community sanitation projects and water pollution control.

Gentlemen, something is happening and happening fast!

Let's take a peep into what has happened to the doctors of North Carolina. Through the State Board of Health, as agent, \$20,000 per year has gone directly into the doctor's pocket out of the maternity and infancy fund; \$86,505 has gone into their pockets from the state's venereal disease funds;

\$28,000 to the surgeons per year doing crippled children work; \$49,000 to hospitals for crippled children; \$35,000 to the dentists; \$27,500 expended in our industrial hygiene program seeking out and locating sick and referring them to the physicians.

It seems to me, gentlemen, as the Executive Administrator of the funds under the policies of your Board, it is expedient that you become concerned lest the administrative responsibility may rest upon other governmental agencies.

The world today seems to be in a state of "flux." There is a great disturbance and unrest in our religious, social and economic structure. It seems that the world has forgotten the golden rule and this rule has been exchanged for selfish individualism with the result that we are at each others throats. There is good in the worst of us, and in my opinion we can capitalize this good at a round table conference by discussing frankly our objectives and ironing out our differences. We can, through consultation, develop a wise program that will contribute to the advantage of all, and to the detriment of none.

In this day of rapid communication, one can no longer live unto one's self. City, county, state and inter-state boundaries are today so closely tied that our citizenry is one large community and it is essential to the welfare of the whole that it be treated as such.

Since 1933, we have grown from 38 full-time county and district health organizations to 76 in 1938. Or, to express it in another way, 90 per cent of our population is now being ministered to by full-time, qualified personnel in the new counties and in replacements in the old.

I have only to remind you of the past for you to realize the great advancement we have made through governmental, state, city and county coöperation in planning to build a health program that will accrue to the everlasting benefit of the whole people.

Our happy and more contented health family, of 580 workers, is fast becoming a recognized and essential unit of our social structure, and its influence and effectiveness is being recognized and appreciated as never before in the history of time.

There are many problems in a community so closely allied that their interest can be best served through an interchange of ideas from experts in each field. This interchange of ideas would prevent duplication, bring about a better understanding and enlarge the field of usefulness of all agencies.

May we consider the relationship between the public health administration and the practicing physician. The passage of the Social Security Act, the La Follette-Bulwinkle Syphilis Bill, State Aid to Counties, Funds for the Erection and Maintenance of Tuberculosis Sanatoria, the Industrial Hygiene Act, and other aiding acts, namely: "A Bill to Prevent Diphtheria in Children and to Eradicate the Disease"; "Prenatal Serological Test Law"; "An Act to Require Physical Examination Before Issuance of License to Marry"; "An Act Requiring Examination of Domestic Servants," etc., are recognitions that government has a definite responsibility in the prevention and cure of disease and the preservation of health. It is a recognition that there is an intra- and inter-state and national relationship that is so interwoven and interdependent that to neglect a part you neglect the whole.

These new responsibilities are a challenge to the ingenuity of the medical profession and all such activities should be directed, supervised and controlled by the best qualified medical personnel available, always mindful of the importance of the ethical coöperation and proper relationship with the medical profession.

Believe it or not, we are at the threshold of a new era, and it is the dawn of a new day if only we would seize the opportunity to guide, direct and control policies. All of us recognize that health security is basic in importance to human happiness and well-being.

After long and continuous controversial discussions as to the merits or demerits of federal participation, the House of Delegates, in special session of the American Medical Association held in Chicago, September 16, 1938, called especially to consider the National Health Program in order that it might establish the policies of the Association specifically with regard to the proposed.

"Briefly, the House of Delegates recommended expansion of public health services, as related to the control of certain infectious diseases, maternal and infant welfare, and similar projects, with the definite understanding that the need be established and that they be efficiently handled and economically controlled." (1) The House of Delegates approved the principle of hospital insurance; (2) the principle of cash indemnity insurance for meeting sickness costs; (3) recognized the need for complete medical services to the indigent under local control; (4) state aid might arise in poorer communities when the state is unable to meet these emergencies.

In short, the House of Delegates approved recommendations of the inter-departmental committees' report save its firm opposition to any compulsory sickness insurance plan.

The Association has not abandoned any of its policies for the maintenance of professional standards.

It is further stated in an editorial of the issue of the American Medical Journal, September 24, 1938, that "the meeting of the House of Delegates had a most wholesome effect in allaying doubts and fears among the medical profession as to the position of the American Medical Association in relationship to recent propaganda that has been widely circulated in this country. The unanimity of expression and action again indicated that these representatives of 110,000 American physicians are able as a democratic body to express the wishes of the vast majority of the medical profession in this country and to speak with one voice for them."

We cannot accomplish anything through continued agitation. We should be democratic enough to follow the advice of the vast majority of our profession. If we could only admit this point we should set about to submit a workable plan that will retain our individuality and give to the patient the right to choose his medical or surgical adviser.

This can, and to my mind must be accomplished if our proud heritage is to be maintained and the program control is placed where it should be, within the ranks of the medical profession.

I am persuaded to believe that it is logical reasoning to assume that we can accomplish nothing through rebellion. We must recognize the truth and the truth must be accepted.

To regiment medical service is to destroy its efficiency.

To preserve medical service to its present standards and promote its continued growth, we must encourage, foster and stimulate individual attainments and recognize it by a compensation commensurate with its importance. In doing this we shall recognize that selfish individualism is hazardous and that mass protection is the necessary element in social security.

There must be a relationship between the practicing physician and public health administration. A correlation and coördination of our activities that will serve to the best advantage to the whole people. In this manner, we can, as M. Edouard Herriot interprets Doctor Sans' efforts as attempting "to make progress serve us instead of enslave us."

Relationship between the public health administration and the medical and dental professions being established, there must be a definite connection between the Boards of Education, Welfare, Agriculture and allied agencies in order to perfect the program in its entirety.

Education

May I make this observation in an effort to stimulate a deeper and more lasting interest—one must feel the need of something before he is willing to make a personal effort to secure it. The realization of this need can only come by knowledge gained through trained personnel. We must admit that the physician, the dentist, the nurse, and the nutritionists have a technical knowledge and are trained therapeutically, but most of them are not trained in pedagogy. The school-teachers, on the other hand, do not have the technical knowledge, but are adequately trained in pedagogy. This is a sad commentary—as is, but with the physician, the dentist, the nurse and the nutritionist trained in pedagogy, and the teachers given the technical knowledge—the picture is changed from what was an uninteresting program into an exceedingly interesting one.

With this in view, there is, at this time, a plan about to be prosecuted whereby the facilities of the State Board of Health and the State Board of Education be integrated in a development of a unified health service in the public schools of our state—by setting up jointly as an initial step a coördinating agency.

In this coördinated agency it is understood and agreed that with regard to instruction in health and physical education there is to be full coöperation between the two agencies but ultimate authority in instructional matters, both in physical education and health education, shall remain with the State Department of Public Instruction.

It is understood and agreed also that with regard to technical matters of sanitation and health services such as clinics, physical examinations by physicians, follow-up work for the correction of defects and immunization programs there is to be full coöperation between the two agencies, but ultimate authority in such matters shall remain with the State Board of Health.

The plan presented in the proposal, therefore, is designed to correct defects in the organization by bringing about more effective team work on the part of both agencies in the formulation and execution of the school health program which meets more adequately the needs of the people.

The importance of such a relationship can well be illustrated by the good that can be accomplished when we visualize the vast force for good for an army of 24,000 qualified teachers with a vision instructing 900,000 children, and this army instructing their parents—the advancement we could make and the service we could render to the moral, social and economic welfare of the citizenry of our state and nation.

Welfare

It is generally recognized that health and education are basic in establishing social and economic security. It is equally appreciated that there are allied essentials in perfecting this ideal—environment, clothing and housing are essential. This would immediately suggest a correlation of health, education and welfare activities functioning with a view of bringing about a closer relationship between health, education and welfare officials.

At this time, through the State Commissioner of Public Welfare, we are attempting, through communication and policies, contacting State Agencies and County Agencies in order that there may be established a harmonious working relationship between the two groups. Statements of duties and responsibilities of County Superintendent of Public Welfare and an outline of the Public Health practices and services approved by the State Board of Health were sent out for study. It also suggested that both the Superintendent of Public Welfare and the local Health Officer discuss together any points which were not thoroughly understood at the time.

Agriculture

Walter N. Cannon, Professor of Physiology, Harvard University, says: "in the United States the population has changed from about 60 per cent rural to 60 per cent urban since 1900." And, I might add that on April 24, 1939, Mr. Milburn L. Wilson, Under-Secretary of Agriculture, made the statement that the rural population of the United States was now 44 per cent. This is significant to me as it is to you, and there must be a reason. People do not leave the country because they cease to love it. They go in search of labor-saving devices, less drudgery and more modern conveniences, all contributing to less labor, more recreation, more pleasure and a "more abundant life."

Low birth rate in the urban is supplied to the cities by the rural population. This condition can only be changed and improved through an interchange of ideas with state and county agricultural officials. With these problems that are so related and interlocked, if you neglect one you neglect the whole. Our object would be to have a unified agricultural program connected with other allied agencies.

We have learned that an impoverished soil means impoverished foods. If the soil lacks essential food elements, the foodstuffs grown on it may show a similar qualitative deficiency.

We have learned that foods given in proper amounts and coming from proper sources will contain the good proteins, carbohydrates, fats, minerals and vitamins in the desired amounts, not only for the body's physical needs but for developing protective forces that will resist diseases. We have realized this for a long time.

We have realized, for a long time, that medical science and laboratory research is far in advance of the public's willingness to take advantage of it.

There must be a reason. Ignorance and indifference both play a part; finances play a part. But, to my mind ignorance of the basic essentials of our body requirements is the outstanding obstacle.

Health education is needed to combat misconceptions, misinformation and carelessness that lead to improper selection and preparation, or contamination of these essential foodstuffs. Nature's laws are relentless and exacting when broken, but kind and beneficial when followed.

These brief statements will make us realize and appreciate the great advantage that could accrue from conferences coming out of such allied agencies.

May I be so bold as to suggest a plan for your careful consideration and mature judgment, before its acceptance or rejection.

Plan

We have our people needing medical care in one group.

We have the medical profession to administer that medical care in another group.

We must have the best available mind to direct this most important and vital element in moral, mental, physical, social and economic welfare.

To whom shall we turn for this service?

The unanimous decision would be that the medical mind is the better qualified.

This being admitted, may I present to you a Board of Directors, namely: Secretary and Chairman of the Executive Committee of the State Medical and Dental Societies; representatives from County Medical and Dental Societies; governmental representation; State Health Officer; County Health Officers; City Health Officers; representative from the Public Welfare; Agriculture Department; Home Economics; Public Instruction; Parent-Teacher Association; Hospital Boards; Institution of the Blind; Mental Hygiene; civic clubs and philanthropic citizens.

From this Board ways and means to be devised and sent out to render service to its citizenry in preventive medicine, medical and surgical care, maternal and child hygiene, crippled children and care for the insane and blind.

North Carolina has 100 counties. Would it not be an advanced step to organize 100 conference committees composed of representatives from all interested agencies to study out problems and formulate plans to solve them?

Yes, we have done much, but the half has not been done!

The determined public has set about to do it and they should have leadership. Organization conferences will prevent misunderstandings among those who have an honest purpose in view.

An honest discussion will bring forth a sane decision, and to my mind, it will prevent the regimentation of medical men which will retain and not destroy their usefulness.

It will retain the individual initiative and resourcefulness and merit will be awarded commensurate with its attainments.

Qualifications will be the standard in selection and not political favor.

DEPARTMENTAL REPORTS

Division of Preventive Medicine

This Division comprises the work of Health Education, School Health Supervision, Medical Supervision of the Crippled Children's work, and the direction and special agency of the Maternal and Child Health Service of the Board and the United States Children's Bureau.

For the most part the work during the year just closed has been more or less routine. There has been one rather radical departure from normal procedure. It may be well to describe that more in detail. Reference is made to the inauguration of what has been designated as the Special County Demonstration in Maternal and Child Health Service work. For about three years officials of the United States Children's Bureau have advised and urged that a demonstration of bedside nursing for obstetric cases in the indigent classes in at least one county, be undertaken. About the middle of last year Northampton County was selected for several reasons, some of which are as follows: first, a competent, coöperative health officer; second, a coöperative Board of County Commissioners, County Board of Health and County Welfare Department; and third, large midwife activities in the county, midwives in the county attending 85 per cent of all colored births and about 17 per cent of all white births, the total amounting to about two-thirds of all obstetric cases.

The purpose behind the effort is to try to demonstrate the value of bedside nursing in obstetric cases, the expected result to be a material reduction in maternal and infant deaths, particularly infant deaths under thirty days of age. The plan calls for a sufficient number of specially trained nurses to answer all calls with midwives, at which time the nurses act as consultants, calling a physician when necessary in their judgment, and in cases where hospitalization is required arranging for that.

The County Medical Society approved the plan, the physicians agreed to respond to all calls in their territory for a nominal fee to be paid by the Children's Bureau, the county arranged for the hospitalization of all cases needing hospital care including maternity cases as well as infants at the county's expense. It requires day and night service, seven days in a week, for nurses working on the program. Midwives are required to have their prospective patients to attend the prenatal centers arranged in the county. The nurses, of course, do home visiting and also see that the expectant mothers attend the centers and also that the babies are brought to the well baby centers. A complete immunization program, together with the venereal disease control program is a feature of the plan. School health work is an essential of the plan and is carried on throughout the county.

One of the principal efforts to be made is to see if such a program can be brought within a sufficiently reasonable bound of expenditure so that the improved health conditions and the saving in lives of mothers and babies will justify the expense so that it may be extended to other counties as funds become available. The work has been underway too short a time for any definite conclusions to be reached so far.

A notable event arranged through this Division during the past year was a state-wide conference on the subject of Better Care for Mothers and Babies

staged on February 15. The medical profession, the health officers, public health nurses, welfare departments and the Home Economics Division of the Extension Service of State College all participated in the program. Speakers were brought from Washington, Chicago and other places. This conference was arranged in close coöperation with the National Council for Mothers and Babies with headquarters at Washington. Representatives from seven states, the District of Columbia, and 74 counties attended all sessions of the conference. Widespread interest throughout the state was a definite result of this conference.

The Division in coöperation with the Extension Service of the University of North Carolina conducted a series of postgraduate courses on obstetrics and pediatrics during the year. The courses were well attended by representative physicians and much interest was manifested by the physicians who attended. The courses were definitely worthwhile.

No effort is made to set forth in detail the routine work of the Division. As a full and complete description will appear in the Biennial Report for the period, it would simply serve to be a duplication for which space should not be used for a double purpose.

Crippled Children's Service. The Division established in 1936 to coördinate and extend crippled children's services in the state has continued to show progress in the primary activity of locating, registering and treating cripples. This activity carried out under plans approved by the U. S. Children's Bureau through the use of Social Security Funds, has met a widespread medical need among the indigent classes in respect to a specialized service that had not been uniformly available beforehand. The need for hospital care is being more adequately met than ever before, although many children have not been reached for whom such services are indicated. The activities of this Division are shown in the following summaries.

Locating Services: There have been 14,000 persons under 21 years of age located and registered with the State Agency. A recent study of these indicates that early detection should be stressed, because the register reflects a preponderance of the cases registered to be classified in the higher age levels; whereas, the primary affections producing cripples appear in the earlier age levels of life. The present activity of local nursing staffs, which have become more adequate, tends to show that there is a trend toward early detection and reference of cripples, and undoubtedly this will result in vital conservation in respect to the physical and financial problem involved in services to this group of our children whose health we undertake to protect.

Diagnostic Services: There are 18 established centers in which special orthopaedic diagnostic services are available. At these centers clinics are held with monthly frequency and there have been 194 clinic sessions conducted for the period covered by this report. At these centers there have been 5,469 admissions for examination or treatment. The clinics are conducted by eleven qualified orthopaedic surgeons who have been approved by the State Agency. The field staff and local health officers, nurses and welfare workers coöperate in the conduct of the clinics and collaborate in aspects of the care and treatment indicated for individual cripples. All age levels are eligible for diagnostic services.

Treatment Services: Treatment for crippled children is provided at the clinic centers and at hospitals. Within the activity of the clinics (194

sessions) there have been 2,626 new cases and 2,843 old cases admitted for diagnosis or treatment. Through the clinics much of the post-operative surgical treatment, care and supervision is provided and the prolonged oversight of the corrected cripple is carried out. During the period covered by this report there have been 857 operative cases recommended, 742 cast procedures, 465 corrective shoes advised, 484 exercise and massage treatments, 210 braces and divers measures as to diet and medication carried out through local physicians and nurses.

Treatment of cases requiring hospital care is, perhaps, the major phase of the entire service to crippled children. Hospital care has been provided under the Plan at the State Orthopaedic Hospital and at selected general hospitals, there being twenty of the latter providing approximately 100 beds. There are 160 beds at the State Orthopaedic Hospital—one-third of which are devoted to negro children. The age limit at the State Orthopaedic Hospital is sixteen years. The annual turnover is about 400 children. There have been 885 admissions to the general hospitals in the period covered by this report.

Follow-Up Services: In the matter of coördinating the services of local agencies in meeting the needs of crippled children the field staff has made a contribution that was not possible before the establishment of the State Agency. In furtherance of general activities and planning for individual children the field staff has held 452 conferences with local health workers and 390 conferences with local welfare workers. In public discussion of crippled children's services and in the development of these, staff workers have engaged in 20 talks with audiences aggregating 879.

The field staff has attended 241 clinic sessions and aided in the registration recording examination, treatment and in formulating treatment plans for 9,149 clinic admissions. One thousand seven hundred and thirty-six patients were given special aid or instruction by these staff workers at clinic sessions.

The field staff, further, has engaged in direct work with the children and their parents in their homes. In carrying out this feature of the service these workers have made 479 investigating visits, located 119 new cases, made 191 home visits to new cases, 1,302 visits to old cases, and referred 499 cases to the Department of Vocational Rehabilitation for educational and vocational guidance and training.

It is apparent that sufficient funds to meet all of the medical and supervisory needs of crippled children whose needs are known are not available at the present time. However, the needs of crippled children are being more adequately met than at any other time in the state's history.

Division of County Health Work

During the last year full-time local health service has been extended to nine additional counties. Health services were begun in Alamance, Alleghany, Ashe, Davie, Polk and Union counties on July 1, 1938. Full-time service was established in Catawba County on September 1, 1938 and in Cleveland County on September 16, 1938. On November 1, 1938 Currituck County inaugurated full-time health service as a part of a district unit. Ashe, Alleghany, Davie and Polk united with adjoining counties in district health service. The total number of counties now provided with full-time local health service is seventy-six (76) in addition to the six (6) city health departments; namely, Asheville, Charlotte, Greensboro, High Point, Rocky Mount and

Winston-Salem. The total number of health units serving these six cities and seventy-six counties is sixty.

There are employed at the present time in the seventy-six counties and six city health departments a total of five hundred and eighty (580) full-time workers. Of this number, sixty-five are health officers, two hundred and fifty-six public health nurses, one hundred and eight sanitation personnel, one hundred and four clerks, seventeen laboratory technicians, seven follow-up workers, five dentists as permanent staff members, and eighteen other medical officers. A total of forty-five dental programs are in effect in these fifty-nine health units, representing eleven hundred and seventy-five (1,175) dental weeks.

Since July 1, 1938 there have been trained or are now in training: eight health officers, forty-five public health nurses, twelve sanitarians, two sanitary engineers, and two laboratory technicians; or a total of sixty-nine trainees. The training of these persons has been made possible through funds provided from Social Security, Reynolds Foundation, or Federal Venereal Disease funds. This personnel has been trained in the Division of Public Health at the University of North Carolina, Johns Hopkins University, Vanderbilt University, University of Michigan, Richmond Division of the College of William and Mary, George Peabody College for Teachers, Saint Phillips Division of the Medical College of Virginia, and Columbia University. All new field personnel have been trained in the field training centers in the Durham City-County Health Department and the Orange-Person-Chatham District Health Department, and in addition to these; the Forsyth County Health Department, the Wake County Health Department, and the Robeson County Health Department have been used for field training of nursing personnel. Training has consisted of at least one month to acquaint them with public health practices and procedures, and laws of the State of North Carolina.

Consultation service has been rendered to the local health units through the Division of County Health Work in public health administration, public health nursing, public health engineering, and statistical work in developing local public health programs and raising the standard of services performed.

On November 28 and 29, 1938, there was a two-day meeting of all health officers in the state called to meet with the staff of the State Board of Health in Raleigh. This meeting was well attended and many of our administrative problems discussed, particularly those pertaining to venereal disease control, maternity and infancy work, and economic plans for future public health work in North Carolina.

During this year all existing health services were continued and the program of activity in local public health service expanded, particularly with reference to the problem of venereal disease control.

Division of Epidemiology

The activities of the Division of Epidemiology have undergone tremendous expansion during the year covered by this Report. The most noteworthy examples of this are the establishment of the Central Tabulating Unit and the great increase in the reporting of and treatment facilities for the venereal diseases.

The Central Tabulating Unit was established under this Division in the early winter of 1938 in especially sound-proofed quarters on the third floor

of the Health Building and actually began operation in January 1939. This unit handles the mechanical tabulation of all venereal disease reports as well as those of other communicable diseases. It was made possible by a research fund grant from the U. S. Public Health Service. It is expected that this unit, through mechanical tabulation, will make available much more detailed information on reported cases of the various diseases than could be obtained before.

The beginning of the fiscal year in July 1938, brought a very definite expansion in the work of venereal disease control. On July 1, 1938, Dr. G. M. Leiby, Consultant, Venereal Disease Control, returned from Johns Hopkins School of Hygiene where he had finished a course in Syphilology. Dr. F. S. Fellows, Surgeon of the U. S. Public Health Service, has continued as Venereal Disease Consultant, rendering advisory service to the clinics in the eastern half of the state, while Doctor Leiby serves in a similar capacity in the western half of the state. Although most of the time of these Consultants is spent in the field, a part of the time of each is spent in the Central Office occupied with routine duties relating to the advancement of venereal disease control in North Carolina.

At the time of this Report there are approximately two hundred venereal disease clinics operating in North Carolina under the supervision of local health departments, which represents an increase of 100 per cent in clinic facilities over those in the state at the time of this Report last year. During the year included in this Report there were 25,826 cases of syphilis reported to this Division, as compared with 13,951 cases of that disease reported for the same period in 1937-38 (May 1, 1937 through April 30, 1938). This represents an increase of approximately 77 per cent. These statistics are based upon cases reported by official case report cards.

It is felt that along with this increase in reporting and expansion in clinic facilities definite strides have been made in the standardization of clinic procedure throughout the state. The "Manual of Minimum Standards for Coöperating Venereal Disease Clinics," issued early in January 1939, had aided materially in the clarification of many problems as to the organization and operation of these clinics, with especial emphasis on treatment procedure. Many of the physical difficulties of operating a clinic were eliminated during this period when long-needed equipment for these clinics was secured.

Funds from the Zachary Smith Reynolds Foundation, which were donated for venereal disease control in North Carolina in December 1937, were allocated during the early part of this Report period to 16 departments in the state. These departments serve approximately one-third of the population of North Carolina. The control program in these local health departments was set up on a basis adequate to take care of the syphilis control problem in these communities. Reynolds Foundation funds were allocated to these departments on a matching basis, dollar for dollar.

On July 1, 1938 funds in the sum of \$84,259, which were made available to North Carolina under the LaFollette-Bulwinkle Act, were allocated to 40 local health departments not already receiving special funds for venereal disease control. These funds were budgeted for clinicians' services, clinic quarters and equipment with the view of providing at least minimum facilities for the treatment of syphilis on a basis comparable with the treatment

received from a private physician. It is believed to be too early as yet to be able to evaluate the success of the syphilis control program made possible by these two funds. It should be stated here that present clinic facilities already are proving inadequate to care for the increasing attendance at the clinics.

In the last quarter of 1938 the coöperative program using a Mobile Truck Unit was begun in Anson County, North Carolina. Personnel consisting of a specially trained physician as syphilologist, a nurse, a clerk and a driver are in charge of this Truck Unit. A late report from this Unit showed that there were over five hundred cases being treated each week and that an attempt was being made to return about three hundred delinquent patients to treatment. It is too early yet to appraise the value of this type of service in North Carolina.

In January 1939, the short intensive course in pneumonia serum typing which was held at Duke University in 1938 for the benefit of laboratory technicians in the state, was repeated.

On March 24 and 25, 1939, a post-graduate clinic on the management of syphilis was held at Duke University. Dr. J. Earl Moore of Johns Hopkins School of Hygiene, Dr. John H. Stokes of the University of Pennsylvania, Dr. Paul O'Leary of the Mayo Clinic, Dr. Harold N. Cole of Western Reserve University, Dr. P. C. Jeans of the University of Iowa, Dr. Norman R. Ingraham of the University of Pennsylvania, and Dr. R. A. Vonderlehr, Assistant Surgeon General, Division of Venereal Diseases, U. S. Public Health Service, gave lectures on this program. Approximately 350 physicians of North Carolina and other states attended this Symposium. It is believed that much valuable information on this subject was made available to these physicians through these lectures.

During the year covered in this Report the Malaria Investigation and Control Unit under this Division has been very active in the promotion of control measures in areas known to be highly malarious. A total of 22,050 blood slides was taken and 9,456 blood slides were examined during this period. Detailed spot maps were prepared showing all features within malarious areas which were pertinent to the malaria problem, such as positive cases established by malaria histories, positive bloods, water courses and areas proven to be producing *Anopheles quadrimaculatus* mosquitoes. Educational campaigns were carried on by means of talks to governmental, civic and other groups, radio talks, press articles, and the distribution of a revised bulletin, upon request. Inspections were made for proposed impounding projects and numerous towns were assisted in the formulation of control plans. Pond owners who are applying voluntary control measures were assisted in cleaning their reservoirs preparatory to the application of larvicides.

The routine activities of this Division followed more or less the same general trend during this year as previously, with the exception of increased volume of correspondence, additional reports and compilation of data, required by the expansion in the work. Radio talks, press articles, talks before civic and educational groups as well as several local medical groups, continued to be a part of the service rendered by the Director and other staff members of the Division.

No notable outbreaks of diseases requiring epidemiological investigation occurred during this period. Several small outbreaks were investigated, in-

cluding one of typhoid fever in Rutherford County, which did not show any serious development.

The distribution of venereal disease drugs, which is handled entirely by the Division of Epidemiology to full-time health departments, has kept pace with the rapidly expanding clinic facilities in the state.

Toward the close of this period three health measures directly concerned with disease control were enacted into law by the 1939 Session of the General Assembly. There were: (1) an act requiring the physical examination of all candidates for marriage license to ascertain the presence or absence of syphilis by serological examination, or of any other venereal disease; the presence or absence of infectious tuberculosis, epilepsy or mental deficiency. Marriage of candidates having any of these diseases or conditions is forbidden except under certain provisions, as set out in the Act. (2) an act requiring that all children between the ages of six months and twelve months, and between twelve months and five years, to be given an immunizing dose of prophylactic diphtheria agent of a standard approved by the U. S. Public Health Service. (3) an act requiring that every pregnant woman shall have a blood test made by a laboratory approved by the North Carolina State Board of Health.

Division of Laboratory of Hygiene

In our report to you last year we outlined our hopes and plans for the new State Laboratory of Hygiene Plant. We are happy to report to the 1939 Conjoint Session that these hopes are taking on physical form.

Shortly after the 1938 Report was presented the Federal Emergency Administration of Public Works offered us a Free Grant—not to exceed \$130,909. This offer was promptly accepted. On September 2, 1938 construction work was actually started on the farm. The farm laboratory building and one horse barn have been completed and are ready for occupancy. On the farm has been drilled a well which together with pump, tank, tower and mains provide us an adequate water system for those activities which will be carried on there. On January 27, 1939, contracts were let for the construction of the Central Laboratory Building on Caswell Square adjacent to the present State Board of Health Administration Building. This building equipped will cost \$185,000. It is expected that it will be completed and ready for occupancy some time in September of this year. Within the next few days contracts for additional animal buildings will be let for construction on the farm. Before this year has closed the Laboratory will have a physical plant of which we can all be proud. This plant will make possible an increased volume of work and an improvement in the quality of service which the Laboratory can render.

If I could only report that we had sufficient appropriation to increase the staff and purchase the necessary scientific supplies, I would be much happier than I am. Unfortunately, we are confronted with the problem of operating the Laboratory with a smaller appropriation during the next two years than we have had during the past two years. This is true, notwithstanding the fact that the major activities of the Laboratory have increased more than 50 per cent during the present biennium. With our syphilis control program just getting started and the enactment of legislation requiring serological tests on expectant mothers and applicants for marriage license, it is certain

that we will have constantly increasing demands upon the Laboratory for service. To do more work with less money is indeed a perplexing problem.

The enforcement of the new marriage law is to a considerable extent a laboratory problem. The law requires that on each applicant for marriage license a serological test be performed by an approved laboratory. It is proposed that temporary approval be given to all laboratories that prior to April 1 were performing one of the following serological tests: Kahn, Kline, Eagle or Hinton Precipitation Tests or the Kolmer or Eagle Complement Fixation Tests. These tests have been included in the Serodiagnostic Evaluation Studies conducted by the United States Public Health Service and in the hands of competent laboratory workers have met the standards of the Advisory Committee. It is probable that some other tests will give satisfactory results but until they have been included in the evaluation studies and their merits have been sufficiently established they cannot be accepted as approved tests. Laboratories starting serodiagnostic tests after April 1 will be required to offer evidence that they have proper equipment and that the technicians performing the tests have had adequate training before such laboratories will be given temporary approval.

In order for laboratories which have received temporary approval to remain on the approved list they will be required to make formal application and supply pertinent information concerning their equipment and the qualifications of their personnel. As soon as practicable after our State Laboratory of Hygiene has moved into its new plant it will conduct, with the assistance of some other nationally recognized laboratory, an evaluation study of all laboratories desiring to stay on the approved list. Such evaluation studies will be repeated as often as are indicated. Those laboratories found to be inadequately equipped or to have incompetent personnel will be dropped from the approved list as will those laboratories found by evaluation studies to be incapable of making reasonably accurate examinations.

It is hoped that we may be able to encourage and improve local laboratory service in North Carolina. We have plans which we believe will stimulate and assist local laboratories. Although these plans are still in the formative stage, it is thought that they will make possible the purchase of supplies, standardized antigens, reagents and stains by qualified laboratories at prices considerably less than those which they are required to pay at present.

During the past year we have made several changes in our serological aids to diagnosis. All specimens of blood sent for serological examinations for syphilis are first tested by the Kline diagnostic test. All specimens giving positive or doubtful reactions are then subjected to the Eagle Complement Fixation Test. All specimens giving positive reactions by both tests are reported as positive. All specimens giving a doubtful reaction by the Kline and a doubtful or positive reaction by the Eagle Complement Fixation are reported as doubtful. All specimens giving negative reactions by the Kline Test are reported negative. These tests are purely qualitative tests and do not determine the amount of reagin in the patients serum. It is only when quantitative tests are performed that a laboratory is justified in making a report which can be interpreted as indicating the quantity of reagin found. Time will not permit a discussion of the probable merits of quantitative tests.

We should call your attention, however, to the fact that syphilis is not the only disease which increases the amount of reagin found in the blood. In

approximately 20 per cent of the patients who have malaria and who do not have syphilis the serodiagnostic test will show an increase of reagin by giving positive reactions. In tuberculous patients, or in patients with febrile conditions or malignant diseases we find from 2 per cent to 4 per cent with increased reagin and falsely positive tests for syphilis. These facts should be kept in mind by physicians—particularly those who are dealing with applicants for marriage license. All doubtful serological tests on untreated patients and all positive tests on patients in which syphilis is not suspected should be confirmed by a repeat test. Preferably such recheck specimens should be taken in the morning before the patient has had breakfast—at any rate several hours after the patient has had his last meal. The increased fat content of the blood interferes with dependable serodiagnostic tests.

One of the most helpful laboratory aids to the diagnosis of early syphilis is the Darkfield examination of Chancre Serum and lymph-node serum. Since we have satisfactory specimen containers which make possible delayed Darkfield examinations, this laboratory aid is available to every physician in North Carolina. I urge that it be used more often.

I also wish to urge that we continue to use the blood culture method for the early diagnosis of typhoid fever and other acute infections. A diagnosis made in the early stages is most helpful in preventing secondary cases and assists the physician materially in the treatment of the patient.

Although we are making progress in the development of our laboratory plant, we should make every effort to conserve our laboratory facilities. We should not send to the laboratory specimens the examination of which will reveal no useful information. The staff of our laboratory makes every effort to supply dependable information. Their loyalty under trying circumstances has been most encouraging and helpful.

Division of Industrial Hygiene

The Division of Industrial Hygiene is engaged in a variety of activities incident to the evaluation and control of occupational diseases.

There were 1,600 industrial workers given medical and X-ray examinations. This included pre-employment, routine, and re-examinations. The medical examinations were made primarily to determine a worker's suitability for employment in the dusty trades. They revealed in many instances, however, conditions that demanded medical attention. All such cases were referred to their local physicians for treatment. The X-ray films were processed and interpreted in the Division offices, and for many of the cases individual reports were prepared for the Industrial Commission. Among the detailed reports were 3 involving asbestos dusts, 7 silica dust, 1 pyrophyllite dust, 1 carbon disulphide poisoning, and 1 disability resulting from exposure to sprayed paint.

There were 218 samples of atmospheric dust collected for particle counts in quarries, brick and tile plants, asbestos textile, feldspar mines and milling plants, kaolin recovery plants, and a textile machinery manufacturing plant. In all, 41 plants were visited for dust counts. A hosiery mill, a cotton mill, and a bromine recovery plant were among the 16 additional plants visited for inspection purposes only. In addition to the 218 samples of atmospheric dust collected for particle counts, 6 samples of industrial dust were collected for petrographic analysis, 1 for chemical analysis, and 21 for particle size

measurements. Most of the dust counts were made in the field, laboratory equipment for which was transported by automobile. The field laboratory equipment was set up in municipal water plant and sewage disposal plant laboratories and in hotel rooms.

Two major reports on occupational disease hazards were prepared. The more detailed and extensive was one on the effects of exposure to dust in the mining and milling of pyrophyllite, a talc-like mineral. The results of the investigation revealed that 35 per cent of all workers with more than 2 years' exposure to the dust exhibited serious pulmonary lesions. The other major reports presented an evaluation of the extent of the dust hazard in the quarrying and stone crushing operations of the state. A progress report on the study of brick and tile plants was prepared, and, in addition, there were 12 formal reports issued on individual plant studies.

There were two cases of dermatitis at two textile mills investigated; and, in company with Dr. Louis Schwartz of the U. S. Public Health Service, there were 110 mule spinners in 6 mills examined for scrotal cancer. Many cases of folliculitis of the thigh and a few cases of keratosis were discovered but no scrotal cancer. Five inquiries on lead poisoning were received, one of which involved assistance to a physician in having blood and urine examined for lead. There were two inquiries answered relative to the effect of exposure to paint spraying. One request was received for an evaluation of a dust hazard in a seed cleaning plant. One autopsy on the body of a former pyrophyllite worker was performed jointly with a group of local physicians.

Based upon office research, two reports relating to the textile industry were prepared in connection with compensation litigation. One involved an exposure to a fugitive dyestuff employed to indicate the quality of rayon yarn, and another covered the carding of low grade cotton. The latter frequently results in the creation of a dust hazard, the most pronounced effects of which are acute irritation of the respiratory system resulting sometimes in a chronic bronchitis.

There were five Industrial Commission hearings attended, 2 involving asbestos workers, 1 a feldspar miner and a feldspar miller, 1 involving two copper miners, and 1 a mica miner.

In order to insure that a large producer of cut granite building stone would obtain the proper dust control equipment, some field research work was done. This involved the design and operation of several experimental exhaust hoods for large granite surfacing machines. An evaluation of an existing system was made, and many data from other states were assembled.

Mimeographed pamphlets were prepared for distribution to the granite cutting industry. One suggested layout plans that may be utilized to take advantage of prevailing winds in the control of dust; another provided directions for constructing a dust-tight sand blast cabinet while still another illustrated the types of U. S. Bureau of Mines approved face respirators for siliceous dusts. The latter is a very important publication inasmuch as several inefficient and unapproved respirators have been found in the granite cutting sheds of the state.

The public addresses of the Division personnel consisted of 3 radio talks, one talk to an engineers' club, one to a civic club, two talks to nurses, two to county medical societies, three to university public health trainees and sociology students, and one to a student ceramic engineering society. In

addition, two papers were prepared and delivered at the Annual State-wide Safety Conference in Asheville, and an article was prepared on the Division's mobile X-ray laboratory. The latter was published in the Journal of Industrial Medicine.

The miscellaneous work included mortality reports to the U. S. Public Health Service for six western counties in connection with their study of the mica, kaolin, and feldspar industries. Upon request, a test was made for the presence of carbon monoxide in the offices of the State Unemployment Compensation Commission. The samples of foundry parting compound were analyzed.

An assistant industrial hygienist was added to the Division staff during the year.

The work of the Division resulted during the year in the complete re-vamping of one plant in which a serious dust hazard existed. Dust control equipment costing approximately \$40,000 was installed, and other changes were made. A hazardous industry was converted to a safe one. Wet drilling has been adopted in several mines, two mineral grinding plants are negotiating for adequate dust control equipment, and a quarry operator has sought the advice of the Division with respect to dust control. During the year much progress has been made in safeguarding the health of workers in industry.

Division of Oral Hygiene

National attention was attracted to the Dental Program of the North Carolina State Board of Health by our Mouth Health Educational exhibit which won the first award at the meeting of the American Dental Association in St. Louis last October. This exhibit was a miniature classroom with a dentist at the blackboard teaching Mouth Health to a group of children. This group of children represented approximately 200,000 children that will be taught in their classrooms by the thirty dentists on the staff of the Division of Oral Hygiene during this school year.

In this exhibit there were sample sheets of our educational follow-up material that the dentists leave with the teachers. There were also copies of the news releases which are incorporated in the mimeographed school newspapers and which go into about 30,000 homes every two weeks.

Perhaps the greatest achievement for the year is the completion of the bibliography of Health Materials which has been worked out in conjunction with the Department of Education of the University of North Carolina and is being made available, without cost, to the teachers.

The dentists on the staff of the Division of Oral Hygiene have inspected the mouths of approximately 175,000 school children between the ages of six and thirteen. Of these, they have done the necessary dental work for about 70,000 underprivileged children and have referred the others who were in need of dental attention to their family dentists.

In addition to their teaching in the classrooms the dentists on the staff have lectured to civic clubs, parent-teacher associations and other groups.

The Division of Oral Hygiene expects to conduct its School of Public Health Dentistry at the University of North Carolina again this summer.

Division of Vital Statistics

The number of requests for statistical data, certified copies of birth and death certificates, and for verification of age or other vital information has increased tremendously within the last few years. During 1938 more requests were fulfilled than for any year since the establishment of the Division of Vital Statistics.

The cause for the greater number of requests is due, first; to the increased interest of the people in public health problems. Many students in schools and colleges, as well as other citizens of the state, are requesting information as to the causes of deaths and death rates. The second cause for increased activity is due to the great number of situations in which it is necessary to establish age, parentage, or place of birth.

The Division of Vital Statistics has attempted to meet this increased demand by improving methods of procedures. The latest machinery for tabulations and calculations are in use for preparing the statistical material.

The Division of Vital Statistics registered approximately 117,000 birth, death and stillbirth certificates in 1938. All certificates are systematically arranged, bound and indexed in such fashion that they may be easily located. Before the certificates are bound an immense amount of clerical work is required to secure the completion and correction of the original certificates. Most of this work could be eliminated if the physicians, midwives, undertakers and local registrars would carefully and completely execute the original certificate.

In 1938 there were 33,765 deaths recorded in North Carolina and 34,100 in 1937. This 335 fewer deaths in 1938 accounted for a decrease in the death rate from 9.8 to 9.6 per 1,000 estimated population. In 1936 the rate was 10.3. Among the more important causes of death that showed decreases for 1938 were typhoid fever, influenza, tuberculosis, pneumonia and pellagra.

The forms used for recording births and deaths have been revised and the new blanks will be used after January 1, 1940. These certificates if correctly completed will permit a more correct tabulation of births and deaths by place of residence. It permits the physician to designate to what cause he believes the death should be assigned. The birth blank will ask for information essential in the fight to lower infant and maternal mortality.

Division of Sanitary Engineering

During the past year the Division of Sanitary Engineering has made every effort to take advantage of the opportunity to improve health conditions in North Carolina by means of funds available from the Federal Government. Through the WPA and the PWA, much work has been done on the construction and improvement of water and sewerage systems, school sanitation, community sanitation, and malaria control.

It is estimated that at the present time WPA projects now working, or applied for by municipalities and sanitary districts for water and sewerage systems and extensions, total over \$2,500,000. During the year, PWA allocations have been made for 50 water and sewerage projects in North Carolina amounting to over \$6,756,328. New, complete water systems have been under construction in 18 towns. This leaves only five incorporated towns of over 1,000 population without such systems, and three of these towns have made

application for funds. There are 88 municipalities of less than 1,000 population that have public water supplies.

With reference to the protection of our streams from pollution, it is gratifying to note that within the past ten years, in fact, largely within the past five years, there has been an increase of 40 per cent in the number of towns having sewage treatment, and an increase of 42 per cent in the number of sewage treatment plants.

This Division has supervised and assisted in making 2,983 inspections of dairies and milk plants. Plans were made, modified, and approved for 61 pasteurization plants and dairies. Pasteurization of milk is definitely increasing, and we now have 89 pasteurizing plants in the state. North Carolina has 175 Public Health Service Milk Ordinance towns, this being more than any other state in the Union, with the possible exception of Texas. Furthermore, 48 of these towns are making 90 per cent or more, on the sanitary rating of their milk supplies. Thus North Carolina, with about 20 per cent of the Public Health Service Milk Ordinance towns in the United States, has 32 per cent of the "honor roll" towns.

There were over 4,188 inspections made of hotels and cafes, and 5,027 inspections under the Bedding Law, which was administered with only four prosecutions. In addition to the above, 712 inspections were made in connection with shellfish sanitation. For the FHA, 263 approvals of residential water and sewerage facilities were given. Recently several towns have taken definite steps toward rodent control by means of rat baiting and poisoning. This work was initiated with an educational program consisting of lectures and motion pictures. During March, the towns of Maxton, Smithfield and Selma have effectively carried out campaigns of this nature, with gratifying results. The citizens of other municipalities are realizing that the rat is not only a destroyer of property, but also a vector of Endemic Typhus.

The Malaria Control Drainage Program shows an increase in the number of men and machines working. The program has been conducted in 26 malarious counties, with an average of 1,831 men working to produce more than 317 miles of new ditches, 240 miles of ditches recleaned, and 40.6 miles of major canals, using 11 machines, and draining 1,463 acres of swamps and ponds. It is estimated that whole or partial protection from the malaria vector has been given over one-half million persons since the program was started.

On the Community Sanitation Program, in recent months nothing but the concrete slab and riser type of privy has been constructed. For the year, 34,880 privies were constructed, making a grand total since the beginning of the program of 165,466 units; thus furnishing better means of excreta disposal to upwards of three-quarters of a million people.

At the present time, hotel and cafe sanitation has developed to a point where there is no reason for patronizing anything but Grade A establishments. If the Grade A sign is not displayed, there may be a questionable milk or water supply, improper excreta disposal, poor dishwashing, the building may not be properly screened to prevent the entrance of flies, food may be exposed to rats, flies, roaches, or other vermin, dust, and dirt, or the employees may not hold a medical certificate issued by a physician showing freedom from infectious and contagious diseases.

The North Carolina housewife can now buy her meats at markets that have met Grade A requirements. There have been 2,436 meat market and abattoir

inspections made by this Division, in addition to the supervision of a large number of inspections made by sanitarians with local health departments.

Gratifying gains have been made in the state under the sponsorship of the Division of Sanitary Engineering. As the people become more public health conscious, and as more plants and systems are installed, additional demands are made for the services of this Division. In addition to the need for more men and means to cope with the ever-increasing routine duties, there are problems such as stream pollution control, industrial waste treatment, plumbing, soda fountain sanitation, and air conditioning which need attention. We are looking ahead, we must advance with the ever-advancing progress of public health engineering to meet the needs of our citizenship.

ANNUAL REPORT NORTH CAROLINA STATE BOARD OF HEALTH

To

CONJOINT SESSION STATE MEDICAL SOCIETY

CARL V. REYNOLDS, M.D.,
Secretary and State Health Officer

May 15, 1940

It has been only one year since the last report was given, but as the River of Time carries me on, I look back and marvel at the progress made in the activities of your health departmental divisions. It is only fair that credit be given to your board of directors; division directors, and the general personnel for the enviable advancement made—it could not have just happened. They gave much of themselves, and it took vision, courage, resourcefulness, as well as the opportunity to have accomplished so much in so short a period. Then, it is with a justified pride that I place in review, a part of what has been done.

Last year you were given the amount of funds allocated under the provisions of Title V and VI of the Social Security Act, monies received from philanthropic sources, state, city and county allotments, and the allied agencies supplemental funds for malaria control, general sanitation, water and sewage, farm security projects, etc. This year these funds have in several instances, increased and in consequence, expanded their scope of usefulness.

Gentlemen, I repeat again this year, something is happening, and happening fast!

It seems to me, as the Executive Administrator of the funds under the policies of your Board, it is expedient that you become concerned, lest the administrative responsibility may rest upon other governmental agencies. We can, through consultation, develop a wise program that will contribute to the advantage of all, and to the detriment of none.

In this day of rapid communication, one can no longer live unto one's self. City, county, state and inter-state boundaries are so closely interwoven that our citizenry is one large community, and it is essential to the welfare of the whole that it be treated as such.

Our happy and more contented health family of 606 workers is fast becoming a recognized and essential unit of our social structure, and its influence and effectiveness is being recognized and appreciated as never before in the history of time.

Division of Public Health

One of the most far-reaching and outstanding advancements made in recent years was in Dr. J. M. Parrott's administration when he and his staff realized the importance of special training for the health officer before assuming his full-time duties.

The University of North Carolina, under the guidance of Dr. Charles S. Mangum, Dean of the School of Medicine, September 24-December 17, 1934, offered courses of study in Public Health Administration in order that immediate and practical needs of trained personnel in this state and region might be adequately met. This service was made possible through the coordination of the facilities and the staffs of the Schools of Medicine and Engineering of the University and the North Carolina State Board of Health, the three agencies of the state which are concerned immediately with the problem of public health.

The staff of instructors at this time was composed of the division directors of the State Board of Health and Professors at the University of North Carolina. The names of the instructors were:

Robert E. Fox, M.D., Director Division County Health Work, State Board of Health.

John H. Hamilton, M.D., Director Division of Laboratories, State Board of Health.

Warren H. Booker, C.E., Director Division Sanitary Engineering, State Board of Health.

Robert T. Stimpson, M.D., Director Division Vital Statistics, State Board of Health.

Joseph C. Knox, M.D., Director Division Epidemiology, State Board of Health.

George M. Cooper, M.D., Director Division Preventive Medicine, State Board of Health.

Ernest A. Branch, D.D.S., Director Division Oral Hygiene, State Board of Health.

Daniel Allan MacPherson, Sc.M., Ph.D., Professor of Bacteriology, University of North Carolina.

Arthur Russell Hollett, S.M.E., Instructor Civil Engineering, University of North Carolina.

John Charles Geyer, S.M.E., Instructor Civil Engineering, University of North Carolina.

M. J. Rosenau, M.D.

Students enrolled in the first course were:

Dr. R. M. Bardin, Forest City, N. C.

Dr. B. B. Dalton, Raeford, N. C.

Dr. F. H. Garriss, Windsor, N. C.

Dr. A. D. Gregg, Liberty, N. C.

This meritorious step placed North Carolina in a position to secure, and she did secure, the Regional School in the Second District, financed in the beginning by the U. S. Public Health Service from funds and scholarships coming out of the ten states within the district.

Our greatest handicap to efficiency was the lack of qualified personnel to man the fast growing demand for county health departments; and, the desire of the politicians to make political appointments to be politically controlled. Politics and public health are incompatible in administration. So it was, to raise our standards that we set up standards for the establishment of qualifications for professional personnel and certain classes of professional employees.

The object of the Division of Public Health in the beginning was to offer comparatively short courses best adapted to equip physicians for the special responsibilities of health work. The curriculum covered a period of twelve weeks and included intramural instruction, laboratory exercises, health surveys, and field work.

In 1936, a Division of Public Health was established and a Director, Dr. Milton J. Rosenau, appointed. The University of North Carolina, at Chapel Hill, was designated and approved by the United States Public Health Service as the center for the training of health officers for the Interstate Sanitary District No. 2, extending from Delaware to Florida, to carry out the provisions of the Social Security Act for the training of public health personnel. A Field Demonstration Unit was established in the Orange-Person-Chat-ham District Health Unit in coöperation with the City-County Health Department of the adjoining county of Durham for the purpose of giving trainees practical experience in rural and urban health administration.

Students are enrolled in the University of North Carolina and enjoy all the rights and privileges of the general student body. They may take courses in other departments of the University, provided they are properly qualified and have the approval of the Administrative Committee. Certain courses in economics, political science, sociology, social work, and statistics are regarded as having an especially close relationship to public health.

The administration reserves the right to refuse admission to any student who, in its judgment, is not qualified to profit by work in the Graduate School, to limit the number of students admitted to any course, and to drop from the roll any student whose work it deems unsatisfactory for any reason. All applications for admission will be assumed to have assented to these conditions.

Graduate degrees offered by the Division of Public Health are administered by the Graduate School of the University of North Carolina. These degrees are: Master of Public Health (M.P.H.), Doctor of Public Health (Dr.P.H.), Master of Science (with designation) (M.S.), Doctor of Philosophy (with designation) (Ph.D.).

All requirements concerning these degrees are administered by an Administrative Committee of the Graduate Division of Public Health with the approval of the Administrative Board of the Graduate School.

The Certificate of Public Health (C.P.H.) is not considered a graduate degree and is, therefore, administered by the faculty of the Division of Public Health in the School of Medicine.

The faculty of the Division of Public Health for the session of 1939-40 consists of the following:

Faculty

Milton Joseph Rosenau, A.M., M.D., Professor of Epidemiology.

Herman Glenn Baity, A.B., S.B. in C.E., S.M., Sc.D. Professor of Sanitary Engineering.

Daniel Allan MacPherson, Ph.B., Sc.M., Ph.D., Professor of Bacteriology.

Harold William Brown, A.B., M.S., Sc.D., M.D., Dr.P.H., Professor of Public Health.

James Clarence Andrews, B.S., Ph.D., Professor of Biological Chemistry.

John William Roy Norton, A.B., M.D., M.P.H., Professor of Public Health Administration.

William LeRoy Fleming, B.A., M.S., M.D., Research Professor of Syphilology.

Daniel Franklin Milam, A.B., M.D., C.P.H., Research Professor of Nutrition.

John Joseph Wright, A.B., M.D., M.P.H., Research Professor of Epidemiology.

Michael Arendell Hill, Jr., A.M., Associate Professor of Mathematics.

Carl V. Reynolds, M.D., Associate Professor of Public Health.

William P. Richardson, B.A., M.D., C.P.H., Associate Professor of Public Health Administration, in charge of District Health Department

Harold Benedict Gotaas, B.S. in C.R., M.S. in C.E., S.M. in Engineering, Assistant Professor of Sanitary Science.

Albert John Sheldon, B.A., M.A., Sc.D., Instructor in Public Health.

Starling Brackett, A.B., M.A., Ph.D., Instructor in Public Health.

Number and Classification of Students—Division of Public Health:

	Health Officers	San. Engineers	Sani- tarians	San. Officers	Special Students	Total
1935.....	7					
Spring—1936.....	14	12	14	4	6	50
Fall —1936.....	15	10	12	3	6	46
Spring—1937.....	19	12	6	9	7	53
Fall —1937.....	19	4	8	4	5	40
Spring—1938.....	19	5	8	6	10	48
Fall —1938.....	13	8	11	4	6	42
Spring—1939.....	14	4	3	2	6	29
Fall —1939.....	14	5	9	1	6	35
	<hr/> 134	<hr/> 60	<hr/> 71	<hr/> 33	<hr/> 52	<hr/> 350

The faculty consisting of 8 full-time Professors, devoting their full time, thought and energy to Preventive Medicine; 8 Associate Professors at the University of North Carolina; 4 Research Fellows and assistants, with 19 other lecturers, constitute an institution of unsurpassed facilities.

Today, we are proud to announce to the world that here in North Carolina there is one of the best, if not the best, Public Health Schools in the country.

Health Education in Our Schools

It is fundamentally sound that every child should be morally, mentally and physically fit to compete for his place in this world. The teaching of health and health habits, in its broader sense, is the objective in establishing a course of Public Health Education in the public schools of North Carolina. It was for this purpose that the forces of the State Board of Health and the State Board of Education have united in the development of a unified health service in the public schools of the state, both white and colored, including Health Education, Physical Education, Public Health Supervision, etc. The initial coördinating agency consists of an advisory committee and a full-time operating staff, the latter under the direction of a State Coördinator of school Health Education and school health services. The committee is composed of three appointive members and two ex officio members. The functions of this committee are to act in an advisory capacity to the coördinators, Dr. John F. Kendrick and Dr. Walter Wilkins, and its individual members

guide and assist them as technical experts in the formulation and execution of a unified school health program. The present members of the committee are: Dr. J. Henry Highsmith, representing the State Department of Education; Dr. Geo. M. Cooper, representing the State Department of Health; Mr. O. K. Cornwell, representing the Department of Physical Education, University of North Carolina; Dr. C. F. Strosnider, representing the State Medical Society; and Dr. J. R. Slay, representing State Teacher Training Schools. The coördinator selects all other personnel subject to the approval of the State Health Officer and the State Superintendent of Public Instruction.

Through this group consisting of coördinator, nurses, physical educator, nutritionist, and a small unit consisting of a colored physician, Dr. Walter J. Hughes and a colored health education worker, Mrs. Irma Neal Henry, working in the colored schools, with the support and aid of the county health officers and their personnel, we hope to bring about more effective team work between the State Board of Health, the Board of Education, the local boards of health, and in the educational formulation and execution of a school health program which will meet more adequately the needs of the state.

When we think of the school population as a whole, there are few fundamental defects that inhibit mental and physical development. To the contrary, there is a large percentage that can, through prevention, correction and cure, become leaders, instead of drones, in the school group. This cannot be accomplished through a routine examination by the school physician or nurse finding the defects and not being able to remove them. This removal can be accomplished only through the education of the individual to realize and appreciate the value of health to the extent of seeking relief rather than being coerced into having the corrections made.

Twenty-five thousand teachers in our schools teaching 900,000 children know how to teach but at the moment many do not know what to teach. Give them this opportunity of Health Education and they will be able to apply their knowledge with greater effectiveness to the student body.

To my mind, this is a great advance in public health progress, and its success or failure will depend upon the resourcefulness of the Coördinator and the whole-hearted coöperation of the county health officers, the superintendent of schools; and last, but not least, the willingness and enthusiasm in which the teacher and public enter into the program.

Such a plan, will, I believe, give us a continuity of service with the least effort and best results.

The soundness of this procedure has been confirmed in 144 schools in four counties within the state by the experience of our staff of the North Carolina School Health Coördinating service, extending now over a period of a school year. To speed up the effectiveness of such a program, there has been set up a proposal for the provision of courses in our School of Public Health at the University of North Carolina providing adequate health instruction for in-service and in-training teachers. We anticipate such a course to be made available by supplementing the facilities now available at the University of North Carolina by the provision of additional staff members thereby making it possible to establish a complete course in Health Education available to students and teachers during the winter and summer sessions.

Public Health Nursing Course

We are contemplating a course in Public Health for nurses to be given under the direction of the Division of Public Health of the University of North Carolina. Many of the courses for nurses are now available at the University in the Division of Public Health and other departments. The courses have been carefully considered as to content and in every case the course will be given by a teacher of outstanding ability.

The new courses introduced into the curriculum would not require a prohibitive expenditure to enable us to give the only course in the country which would be given by a full-time staff of university calibre. We hope to be able to offer this course to the public health nurses by the fall of 1940.

Cooperative Nutrition Study

Our knowledge of the scientific fundamentals of nutrition, the value of the protective foods—the lack of which causes “deficiency diseases”—as against the foods to supply our energy needs, has advanced to such an extent that we should put our existing knowledge into practice.

We have done much in preventing the preventable, and in curing the curable in infectious diseases, but let's be specific—what have we done in a concerted effort toward preparing our bodies to resist infection through natural forces?

Through dietetics we can do much in this field, yet scarcely touched. In order to best fortify our bodies we must familiarize ourselves with the qualitative as well as quantitative dietary essentials indicated in the various stages of body needs for development and replacement, and resistance against diseases.

From these data it is natural to conclude that health education should be more securely entrenched in the school curriculum and certainly food, and food values have become a basic science of such importance in the establishing of a sound body, and in the preservation of health and the prevention of diseases, that it should take a prominent place in our educational programs in the schools, in our health departments' preventive program, and among the physicians as a preventive, corrective, and curative administrative procedure.

We have learned that an impoverished soil means impoverished foods. If the soil lacks essential food elements, the foodstuffs grown on it may show a similar qualitative deficiency.

There are diseases known to us all that can and should be prevented by proper diet, but pause for a moment and think of the sub-clinical dietary diseases, far greater in number than those severe enough to be clinically recognized, but that eventually lead to degenerative diseases.

Since 1937 we have been thinking of ways and means to combat this much neglected problem and naturally we are very happy indeed to report to you today the advanced steps taken which we believe will lead to great possibilities.

Financed from outside sources, we have been able to set up under Dr. D. F. Milam, a member of the staff of the International Health Division, Rockefeller Foundation, the State Board of Health, and Duke University Medical School where trained biochemists and physicians would be available for work on

these nutrition problems, a coöperative Nutrition Study which was begun in North Carolina January 1940, having for its object the assessment of the nutritional status of various sections and groups in the state and the devising of plans for the betterment of the dietary of the people by widespread diffusion of knowledge about nutrition and opportunities for improvement.

The three coöperating agencies selected a community near Duke University for investigation. There was a technical committee of four members organized to fix the methods and procedures to be followed by this study and to appraise results. This committee was composed of Dr. J. M. Ruffin, clinician; Dr. W. A. Perzweig, biochemist; Dr. J. W. Dann, physiologist and Dr. D. F. Milam, epidemiologist. In addition to this small committee there was organized a general nutrition committee to have general supervision of policies. This committee has had a meeting with representatives attending from the State Health Department; Department of Education; Department of Agriculture; Department of Welfare; Duke University; the University of North Carolina; North Carolina Woman's College; North Carolina State Medical Society and the Rockefeller Foundation. The representatives were enthusiastically interested, and at this meeting there was set up sub-committees from each department above named to determine in what way they could best serve in making more effective this nutritional study and in what way they could participate in perfecting the organization's objectives.

Many families are being studied after having had a painstaking physical examination, and placed on a seven-day food intake, carefully supervised daily by a competent dietitian for each individual family member. The records are kept.

At the time of the physical examination a 25 cc. sample of blood is drawn and oxalated. From each red cell count, hematocrit, hemoglobin, total proteins, albumin, phosphorus, phophatose, Vitamin C, Vitamin A, are made. Also X-ray pictures of the wrist and ankle are made.

Naturally, we are in the beginning of a very important study, the appraisal of which will be made later. We firmly believe that the outcome of this study will bring to us valuable information and it will be the beginning of one of the most important activities, with far-reaching results, that has yet been started in our preventive program.

New Plant for the State Laboratory of Hygiene

The April, 1940, issue of *The Health Bulletin* published by the North Carolina State Board of Health, was sent to each member of the North Carolina Medical Society, as well as to about 48,000 other citizens of the state, setting forth, more or less in detail, the dedication of our new Central State Laboratory of Hygiene Building, located on Caswell Square, and the State Laboratory of Hygiene Farm. I hope you gentlemen will file this number in your library for it is of exceeding historical value.

I quote a paragraph from Dr. G. M. Cooper's editorial of the April issue: "Once again the April issue of *The Health Bulletin* becomes a medium for recording events in State Health Work of great historical importance. This issue in the years to come should be of increasing interest to all students of the state's progress. It records complete success in the latest and largest item in material advancement yet made in the constant struggle to make the whole state a more desirable domain in which its people may live and work."

For a more complete description, I am also quoting what Dr. John H. Hamilton, Director of the Division of Laboratories, had to say as to ways and means of the completion of the buildings and a bird's-eye review of the uses of each.

"February 28, 1940, was the official completion date of the building program for the State Laboratory of Hygiene. These new buildings were made possible by the issue of \$160,000 of Revenue Bonds and the allocation of a Public Works Administration Grant of \$130,909. The acquisition of funds from various sources brought the total cost up to \$308,000.

"The plan consists of the Central Laboratory Building on Caswell Square, 214 West Jones Street, which was dedicated on February 21, as the Clarence A. Shore Memorial Building and the Laboratory Farm, located on U. S. Highway Nos. 1, 64 and 70, six miles west of Raleigh.

"The Central Laboratory Building consists of four stories. On the first floor are located the mailing room, the media preparation room, the dish-washing and sterilizing room, a store-room, a small animal room and a machine shop. On the second floor are the business offices, the library, the water laboratory, the auditorium and the microscopic examination laboratory. On the third floor are found the filing room, the laboratory for serological examinations for syphilis and the bacteriological examinations. The fourth floor is devoted to the preparation of typhoid vaccine, pertussis vaccine, diphtheria toxoid, Schick Test material and the latter stages of the preparation of small-pox vaccine, diphtheria and tetanus antitoxin.

"The State Laboratory of Hygiene Farm consists of approximately 280 acres, 80 acres of which is under cultivation—200 acres in woodland. The farm has a frontage of 1,550 feet on three National Highways and two railways. On this farm are located the farm laboratory building, two horse barns, one sheep barn, two small animal buildings and a smallpox vaccine building, a root storage cellar and several wooden sheds. On the farm will be carried out the preliminary preparation of our antitoxins, our rabies vaccine and smallpox vaccine. The small animal buildings will make it possible for the laboratory to produce the guinea pigs, rabbits, mice and other small animals which will be needed in routine operations. It will also be possible to grow on the farm the feeds best adapted to the needs of our animals.

"The physical plan of the State Laboratory of Hygiene will make it possible to increase personnel, improve services and extend activities if funds are available for these purposes. It is so designed that it does not necessitate the employment of additional personnel for its operation if no greater amount of service is to be rendered than the laboratory has been rendering in the past—in fact, certain economies may be effected which were impossible in the past.

"The laboratory as an institution faces the future with the hope that its services may be in keeping with its traditions of the past, as well as the facilities made possible by its new physical plant."

Departmental Reports

I have before me departmental reports that set forth, in a concise description, the many advancements made in each department. Time will forbid my reading them to you but we are hopeful from time to time during the year, they may be published in our *State Medical Journal* or in *The Health Bulletin*.

tin. May I appeal to you to give the messages contained from each division careful attention when you receive them?

Division of Preventive Medicine

The most pressing work of this division has been the health education work as always. The keystone of the health education work is the *Health Bulletin*. The subscription list by request has increased from a circulation of 49,000 monthly copies at the beginning of the year to 54,000 copies at the end of the year. In addition to the editorial work necessary to issue the *Health Bulletin*, the series of special pamphlets, about forty in number, have been kept up to date and two or three were revised during the year. In connection with the health education work, nearly two million pieces of special literature were distributed in addition to the copies of the *Health Bulletin* sent out on the regular mailing list. Approximately four thousand personal letters were replied to, giving advice and information on medical subjects.

Free toxoid was provided by the division sufficient to give one immunizing dose to about thirty-three thousand babies. Most of this was administered through the whole-time county health departments. Silver nitrate for use in the eyes of newborn babies, required by law since 1917, was provided free of charge at the expense of this division to physicians, hospitals and midwives, sufficient for the protection of every baby born in the state. Instruction and examination of all midwives working in the twenty-four counties having no health departments was provided. A large number of midwives were instructed and examinations provided with permits following in whole-time counties at the request of the health officers.

During the year about 175 maternity and infancy centers were conducted in coöperation with the local health officers and with the aid of physicians engaged on a part-time basis through the use of Children's Bureau funds for the purpose. This service covered fifty-two counties. In these centers for prenatal patients, nearly eleven thousand expectant mothers attended one or more of the monthly clinics where they received the careful examination by the attending physician and the advice of the physician was carried out by the nurses in the local health departments. Nearly fifteen hundred positive Wassermanns were found among this group of women. Nearly seven hundred women were sent to a hospital for care as a result of these examinations. The number of women examined and instructed comprise about one-half of all the midwife deliveries in the state, and means that for the first time medical advice has been available to such women.

A total of more than 26,000 infants were brought to the well baby clinics. Of especial importance has been the experiment fully underway in Northampton County, which is one of similar experiments financed by the Children's Bureau in five states. The Northampton demonstration has so far been satisfactory, especially in pointing out the needs for such service and the cost that it would take to provide it in other counties needing it equally as bad. A similar experiment has been undertaken in Polk County but has only recently got fully underway. Conclusions in every respect about these two county experiments cannot be reached at this time.

Hearing conservation program and the nutrition program has been aided, and the latter now underway under the direction of Doctor Milam, should prove to be highly satisfactory. A far-reaching plan for the defective

hearing survey is being worked out in the City of High Point to begin the first of September.

School inspection work has been carried out in a satisfactory manner according to plans and operation for several years. The force of eight nurses is being gradually merged into the work of the new Coördinating Service under the direction of Doctor Wilkins. Two of the eight nurses have already been assigned for that work and it is contemplated the others will be rapidly transferred to his department.

Aid to county health departments has been provided through the use of Children's Bureau funds sufficient to employ fifty-seven nurses assigned to forty-three counties.

Dr. Emmett S. Lupton was employed, effective January 1, 1940, as an assistant for especial work with the maternity and infancy centers.

Crippled Children's Service. Provision for the coördination and extension of crippled children's services in the state has continued to progress. This activity is carried out under plans approved by the U. S. Children's Bureau and with appropriations authorized by the Federal Social Security Act. The purposes of the plan are: to locate crippled children between the ages of birth and twenty-one years; to register these after a competent diagnostic classification; and, to provide treatment for children coming within the scope of the service who are of certified indigent families.

Locating Services: The number of children located and placed on the register during the period covered by this report represents an increase of approximately ten per cent. The number on the register as of January 1, 1940, was 15,343, only 12 per cent of which number were under the age level of five years, while 51 per cent are within the age levels of five to fourteen years, inclusive. This would indicate that more emphasis should be put upon locating and referring children with crippling affections in the earlier years of life. Indeed, such emphasis might well portend the possibilities of prevention in the extent of morbidity and ultimate permanent disability experienced by children from conditions which lead to crippledness.

Diagnostic Services: There are now twenty established public centers in the state where special orthopaedic diagnostic and consultant services are available for the examination and classification of cripples. Clinics at these centers are conducted at least monthly. There are 266 clinic sessions conducted during the period reported, at which 12,418 examinations were carried out, these examination representing 4,011 first admissions of children during the period and 8,407 return visits of children. The examinations were carried out by eleven orthopaedic surgeons who have been approved by the State Agency on the basis of specialized qualifications in the field, aided by staff workers of the State Agency, local health officers, nurses and welfare workers, all of which personnel collaborate in the program of care and treatment of crippled children. Diagnostic services are available to all age levels of cripples.

Treatment Services: Treatment of crippled children entails procedures carried out in the clinics, at the State Orthopaedic Hospital, at selected general hospitals, one approved convalescent home and in boarding homes, as well as in the homes of families from which the children come. Clinics provide for much of the post-operative surgical care and treatment and supervision, where persistent oversight of corrected conditions must be carried out.

in some instances, over many years. Hospitals serve for a relatively short period in the treatment process and the convalescent home and boarding home, where available and utilized, serve to meet special needs of patients between intense treatment in the hospital and the prolonged convalescence and oversight in the private home, to which the patient is ultimately returned.

For the period covered by this report there were a total of 1,388 hospital admissions—60 per cent of which were to general hospitals and 40 per cent to the State Orthopaedic Hospital. Of these admissions, 1,211 were treated and discharged within the period and 177 admitted children remained under care at the close of the period. Hospital care represented 75,135 Hospital days of which 23 per cent was provided at general hospitals. Treatment of children through hospital admissions (1,400 in round numbers), compared to treatment on clinic admission, indicates that approximately 12 per cent of the children admitted to clinics were treated in hospitals, whereas 88 per cent were treated at the clinics and in the private home of the family, through the facilities of the clinics.

Follow-up Services: Aside from the value of the clinics in providing follow-up services, the State Agency, through its field staff, has rendered supervisory services by the admission of 2,263 individual children for the first time during the period reported and has carried out 4,114 field and office visits, as well as rendering service to children on 7,493 visits of the children to centers. Further evidence of the activity of the State Agency staff is reflected in the number of consultations with individual technical workers, local agency personnel and other persons who take a vital part in the planning and supervision of individual children. Such activities during the period were: conferences with surgeons, 360; conferences with health workers, 447; conferences with welfare workers, 454; conferences with others (local physicians, lay workers, etc.), 478; and, referrals to the State Department of Vocational Rehabilitation for pre-vocational and vocational guidance and training, 1,502.

From the foregoing it is apparent that progress has been made and that efforts have increased during the period to provide for the needs of crippled children. However, this progress must persist, and effort increase, if all the needs of crippled children in the state are to be met. At the present time there are neither adequate funds nor personnel to provide the needs, although facilities are not fully utilized. Therefore, continuance of progress must rest upon the support which all of the people of the state give in the solution of this problem.

Division of County Health Work

During the last year full-time health service has been maintained in the seventy-six county and six city health departments but no extension was made in new areas of the state. Effort was made to maintain these existing departments rather than attempt expansion. This was made necessary because of lack of additional funds for expansion purposes. Requests had been made of the Legislature for funds but the increased appropriations were not granted.

To this date, there are sixty full-time local health departments in North Carolina, forty-three of which are county health departments, eleven district health departments and six city health departments. Health service is pro-

vided thirty-three counties by the eleven district health departments, the size of these districts varying from two to five counties for each department.

There are employed at the present time in the seventy-six county and five city health departments (exception, Winston-Salem), a total of six hundred and three full-time workers. Of this number sixty-eight are health officers, and ten are other medical officers (nine epidemiologists and one county physician). There are two hundred and seventy-one public health nurses, one hundred and ten sanitation personnel, including sanitary officers, sanitary engineers, and part-time veterinarians. There are one hundred and fourteen clerks, eighteen laboratory technicians, seven men employed as follow-up workers in Venereal Disease Control, and five dentists employed as permanent staff members. Forty-seven departments not employing full-time dentists have been provided with oral hygiene programs by the Division of Oral Hygiene of the State Board of Health totaling twelve hundred and forty-nine (1,249) weeks of dental service.

Since July 1, 1939, there have been trained or are now in training—six health officers, forty public health nurses, one sanitary engineer, seven sanitarians, and two laboratory technicians; or a total of fifty-six trainees. The training of these persons has been made possible through funds provided from Social Security, Reynolds Foundation, or Federal Venereal Disease funds. This personnel has been trained in the Division of Public Health at the University of North Carolina, Johns Hopkins University, Richmond Division of the College of William and Mary, George Peabody College for Teachers, Saint Phillips Division of the Medical College of Virginia, University of Pennsylvania, Western Reserve University, and Columbia University. All new field personnel have been trained in the field training centers in the Durham City-Council Health Department and the Orange-Person-Chatham District Health Department, and in addition to these, the Forsyth County Health Department and the Wake County Health Department have been used for field training of nursing personnel. Training has consisted of at least one month to acquaint them with public health practices and procedures, and laws of the State of North Carolina.

Consultation service has been rendered to the local health units through the Division of County Health Work in public health administration, public health nursing, public health engineering, and statistical work in developing local health programs and raising the standard of services performed.

On February 20, 1940, there was a one-day meeting of all health officers in the state called to meet with the staff of the State Board of Health in Raleigh. This meeting was well attended and many administrative problems discussed, particularly those pertaining to the recently enacted laws of the State of North Carolina relative to diphtheria control, the physical examination of expectant mothers, including serological tests for all, and considerable time was devoted to presentation and discussion of the program for the co-ordination of health and educational activities in the health and school programs of the state.

Division of Epidemiology

During this year the activities of this Division have greatly expanded. The Central Tabulating Unit, established in January, 1939, under the Division of Epidemiology, had on May 1, 1939, 24 clinics in the state under its plan

of operation and had abstracted 7,787 individual case histories for syphilis patients. In order to issue reports for these clinics the Unit had to process 26,000 treatment cards and 6,600 summary cards a number of times on four different machines, thus handling an equivalent of 331,000 cards. On April 1, 1940, there were 223 clinics under this Unit and 50,701 cases had been abstracted. Counting new admissions (cases admitted after the abstracting of a clinic has been completed), the Central Tabulating Unit now had records of 69,174 venereal disease patients. The active case load for all clinics was 35,835. In order to issue reports for these clinics it was necessary to process, punching excluded, approximately three and one-fourth million cards.

At the close of this report year a new type of report card, designed for and applicable to the punch card method of tabulating, has been devised for all communicable diseases, about which very few complaints were being received. In April of this year the Unit had been issuing communicable disease reports for over a year. Means of mechanically printing "work sheets" for weekly, monthly and annual reports had been devised and were working satisfactorily.

In addition to the work done by the Central Tabulating Unit for this Division it also has done statistical work during this year for the Division of County Health Work. For that division the Unit issues quarterly statistical reports to the U. S. Public Health Service, the Children's Bureau, and to the full-time health service counties in North Carolina.

Besides regular activities of the Unit the following tabular work was performed during this year: (1) Syphilis in Pregnancy Study; (2) Syphilis as a Cause of Death; (3) Brick and Tile Study for the Division of Industrial Hygiene. Ground-work has been started for statistical analysis of work done by the Division of Oral Hygiene and Sanitation.

Malaria Investigation and Control Unit, which is a part of the Division of Epidemiology, has continued making county-wide, detailed surveys in counties known to be malarious. On these surveys blood smears are made from all school children through the first six grades; the home of each child with a positive slide is located with a symbol on a large county map. In the focal areas thus established detailed surveys and investigations are made and a map prepared showing all houses, bodies of water, streams and other pertinent data. Different symbols are used to distinguish homes with malaria and to show the means by which the existence of malaria was established, such as blood slides, malaria histories and information given by practicing physicians. Breeding places of malaria mosquitoes are shown on the maps after investigations are made. During this year 9,101 blood slides were taken and 10,157 slides were examined by the laboratory technicians. Educational work has been carried on by talks in schools, before civic, governmental and other groups, by radio talks, published articles, motion pictures, exhibits at county fairs, and by the distribution of literature. Before granting permits to impound waters inspections have been made and the local health departments have been assisted in the supervision of control programs on waters that were previously impounded.

Information collected by this Unit has been instrumental in getting drainage districts organized for the purpose of eliminating malaria mosquitoes' breeding areas, in promoting larvicide activities in rural areas and in urban communities as well as on impounded waters which existed prior to the

adoption of our impounded water regulations. All of the major hydroelectric companies in the state are conducting malaria control programs on their impounded waters. Through the efforts of this Unit this program has been expanded to include smaller companies which heretofore have carried on no control. The officials of several railroad companies, upon being convinced that their borrow pits were responsible for the transmission of malaria, drained about twenty pits at the request of this Unit. The general plan of operation conforms closely with that which was previously outlined.

During the year covered by this report, the number of personnel in the Venereal Disease Control Unit under this Division did not change, although there was an increase in the work of the Unit. Two venereal disease consultants, rendering advisory and supervisory service to health officers and others, comprise this special personnel. Dr. F. S. Fellows, Surgeon, U. S. Public Health Service, has continued in the capacity of consultant for the entire year. Dr. Ralph J. Sykes replaced Dr. G. M. Leiby, who resigned this position on December 15, 1939.

There has been an increase in the activities of this Unit this year, although not as marked as during last year. On April 1, 1940, there were 223 clinics in operation in the state with an attendance of 35,835. During this year 15,515 new cases of syphilis were reported, 609,808 treatments having been given. The greatest expansion of activities having been reached last year, it was considered advisable to concentrate on improving services rendered. To this end we have completely equipped and purchased supplies for practically all clinics. These clinics are now properly set up so as to render maximum satisfactory services to patients.

Darkfield microscopes have been distributed to 31 counties in order that primary syphilis cases can be diagnosed and treatment begun early. Five fluoroscopic units to be used as an aid in diagnosing cardiovascular syphilis have been installed in the larger clinics. A large variety of educational material and equipment have been made available, upon request, to any health department in the state. There is an increasing demand for this service in unorganized as well as organized counties.

Since July 1, 1939, free drugs have been available to all physicians in North Carolina. These drugs include neoarsphenamine, bismuth and distilled water. From July 1, 1939, through April 30, 1940, drugs in the sum of \$5,653.52 were distributed to North Carolina physicians without charge.

A syphilis survey of the entire prison population in the state, made in 1939-1940, showed the following results:

STATE UNITS:	<i>Population</i>	<i>Syphilitics</i>	<i>Percentage</i>
White	1,482	93	6.2
Colored	2,760	316	14.3
Total.....	4,242	409	9.6
COUNTY UNITS:			
White	2,528	248	9.5
Colored	2,763	1,572	53.2
Total.....	5,291	1,820	34.3

GRAND TOTAL, ALL PRISON UNITS:			
	<i>Population</i>	<i>Syphilitics</i>	<i>Percentage</i>
White	4,010	341	8.5
Colored	5,523	1,888	34.2
Total.....	9,533	2,229	23.3

This work was a coöperative enterprise by the State Board of Health and the State Highway and Public Works Commission. Arrangements have been made to place the entire syphilitic population under treatment and to check accurately on each prisoner during his entire prison term. A syphilis survey of the colored population in Onslow County has just been completed, but results have not been tabulated yet. In this survey an attempt was made to show the prevalence of syphilis and of malaria, and the relationship of malaria to serological tests for syphilis.

An additional mobile clinic was recently assigned to duty in the state, in Lenoir and Craven counties. Educational campaign in this connection has been completed and actual treatment is ready to begin. An experimental laboratory for the study of syphilis has been established at the University of North Carolina under the direction of Dr. Wm. L. Fleming, who formerly was engaged in research at Johns Hopkins University.

The premarital examination law in North Carolina has been in effect for about one year. To date 2,037 examination certificates have been filed with the State Board of Health in accordance with this law. The prenatal examination law became effective January 1, 1940. Birth certificates on record in the State Board of Health show 3,042 examinations made for the month of March. Both of these laws have been well received and it is felt that they are of considerable value to our effort to eradicate the venereal diseases.

During the summer of 1939 an outbreak of poliomyelitis occurred in several counties in North Carolina, in the northeastern and extreme western sections particularly. Although the disease was held within the confines of the affected territory and did not receive much publicity, the attack rate in the counties involved was even higher than the attack rate for the entire state during the memorable 1935 epidemic.

Due to an increased demand for State Board of Health supervision for rat control campaigns in relation to the spread of endemic typhus fever in the state, this Division has employed an engineer to devote his full time to this work, beginning April 1, 1940.

Through the coöperation of the State Board of Health with the Metropolitan Life Insurance Company, the pneumonia control film entitled "A New Day," which is released by the U. S. Public Health Service and the Metropolitan Life Insurance Company, has been booked in 72 theatres in North Carolina for an early showing. The Metropolitan informs us that this represents 22 per cent of the theatres in the state and is considered an excellent response as compared with that in other states.

Reports of diphtheria cases recorded in this Division show a slight decrease for the first year in which the diphtheria immunization law operated as compared with the preceding year. It is felt, however, that the decrease is not yet large enough to be of any particular significance.

Division of Laboratory of Hygiene

For the State Laboratory of Hygiene we can at last report the fulfillment of promises made to the 1938 and again to the 1939 Conjoint Session.

The Central Building and the laboratory was accepted on February 5, 1940, occupied on February 9, 1940, and dedicated as the Clarence A. Shore Memorial Building on February 21, 1940.

On the Laboratory Farm an additional horse barn, a sheep barn, two small animal buildings, and a smallpox vaccine building have been completed and occupied during the month of April.

The present physical plan for the laboratory consists of eight modern brick buildings and several smaller concrete and wooden structures. A considerable amount of new equipment has been placed in the new buildings. If our laboratory were to be appraised on the basis of physical equipment, it would rank with the best in the nation. Unfortunately, it has been impossible to make increases in personnel of the laboratory as rapidly as the work demanded of the laboratory has grown. It is still necessary, therefore, for the staff to devote their entire time to routine procedures and to use more haste than we consider advisable. We are resolved that the staff at the State Laboratory of Hygiene shall be in keeping with our physical plant and that the methods used will be as good as the best. The laboratory should participate in such investigations as will bring forth additional information concerning health problems of North Carolina and make some contributions to the sum total of human knowledge.

We consider it appropriate that the Central Building of the new State Laboratory of Hygiene was dedicated to Dr. Clarence A. Shore, who was its founder and for twenty-five years its Director. A bronze bas-relief of Doctor Shore and a suitable bronze tablet was placed in the main corridor of this building. The Dedicatory Exercises were well reported in the April issue of *The Health Bulletin*. The account of this inspiring service is commended to you for your thoughtful consideration. This permanent record should do much to assure that the Shore tradition will continue through the years to guide the destiny of the laboratory.

The making of serological tests for syphilis continues to be a major activity of the laboratory. During the calendar year of 1939 more than 372,000 tests were made in the laboratory. The enforcement of the new Marriage Law has resulted in the approval of forty-eight local laboratories. It is probable that it will be necessary to remove some of these from the approved list because of inadequate equipment or unsatisfactory methods. Unfortunately, our building program has interfered with the making of inspections and the conduct of evaluation studies. We are genuinely concerned about the problem of local laboratory service and pledge our sincere efforts to its improvement and encouragement.

The laboratory continues to participate in evaluation studies conducted by the Advisory Committee of the United States Public Health Service. In the study reported last summer our Kline Test was Positive in 90 per cent of the specimens from patients with syphilis and Negative in 99 per cent of specimens taken from normal healthy individuals. Our Eagle Complement Fixation Test was Positive in 85.6 per cent of the specimens from patients with syphilis and Negative in 99 per cent of the specimens from normal healthy

individuals. Each test gave one falsely positive reaction. A check of the records showed that the specimen falsely positive by Kline was negative by the Eagle and that the specimen falsely positive by the Eagle was negative by the Kline. Since it is our policy not to report a specimen as Positive unless it is Positive by both the Kline and Eagle, the serological reports of the laboratory would not have included a single falsely Positive specimen among those in the study.

Of the laboratory aids to diagnosis of syphilis the delayed Darkfield examination of serum from suspected chancres is still a widely neglected procedure. This is most unfortunate, since it is definitely helpful in the early diagnosis of syphilis and can supply definite information before the serological test can reasonably be expected to show Positive findings.

For the diagnosis of typhoid fever we are still urging the use of blood cultures. We have had a very encouraging response to this laboratory aid to diagnosis. Each year an increasing percentage of the typhoid fevers reported are diagnosed on the basis of a positive blood culture. We are confident, therefore, that among the families calling their physician early there are fewer and fewer secondary cases of typhoid fever.

During the next several months the laboratory will be confronted with numerous unusual problems. It will require considerable time for administrative procedures to become adapted to new conditions. It will take time for new equipment to be adjusted. New personnel cannot be secured and trained immediately; consequently, we urge that you be patient. We are making every effort to hasten the day when the laboratory will be functioning with reasonable efficiency. We are receiving numerous suggestions that will be helpful when it becomes possible to expand the activities of the laboratory. We will welcome additional suggestions as well as frank and honest criticism. It is our earnest desire to render the maximum amount of service possible with the facilities available to us. We have a laboratory staff which is loyal and enthusiastic rendering conscientious service, willingly and cheerfully.

Division of Vital Statistics

The past year witnessed several important gains in the fight against disease as attested by the mortality record for the year. While there were fewer deaths from all causes than for any year since 1933 there were more births than occurred any single year since 1928.

In exact numbers the 80,421 births reported during 1939 outnumbered the 31,928 deaths recorded during the same period by 48,439. This was 1,636 fewer deaths than were reported as occurring the previous year, bringing the rate down from 9.5 per 1,000 population in 1938 to 9.0 in 1939. If the 1938 rate had remained unchanged last year there would have been 1,911 more deaths than actually occurred. Or, in other words, the decrease in the death rate represents a saving of 1,911 in 1939.

In studying the tabulations of deaths in more detail it is found that the greatest improvement comes from a decrease in the number of deaths from the infectious diseases. Deaths from such causes as heart diseases, nephritis, cancer and diabetes either increased or remained substantially the same.

Among those conditions accounting for fewer deaths in 1939 than in 1938 was typhoid fever. There were 46 deaths from this disease last year compared to 72 the previous year. There were 47 fewer deaths from all forms of tubercu-

losis. There were no deaths from smallpox; 63 deaths from measles compared to 244 in 1938; 225 whooping cough deaths compared to 267 the previous year. Among the diseases that showed a decrease in the number of deaths and consequently the death rates were scarlet fever, malaria, pellagra, appendicitis, tetanus, epidemic cerebrospinal meningitis, etc.

The fewer number of deaths charged to pneumonia is an encouraging trend. Last year there were 537 less pneumonia fatalities than the year before, the total number of deaths from this cause in 1939 having been 2,172 as compared with 2,709 in 1938. This was a continuation of the downward trend shown in 1938 when there were 236 fewer deaths from pneumonia than in 1937.

Further gratifying results are shown in the fewer infant and maternal deaths. There were 4,704 infant deaths last year, or 757 fewer than the 5,461 in 1938. There were 67 less maternal deaths than for the previous year, the total number in 1939 having been 383 as compared to 450 in 1938.

The statistics regarding diphtheria were not so gratifying. It is true that we are holding our own but there was no marked improvement. There were 173 deaths from this disease in 1939, with a rate of 4.9 as compared with 176 deaths and a rate of 5.0 in 1938, the decrease in both the number of deaths and the rate having been of no statistical significance.

In addition to the increased amount of statistical tabulations and analyses being done by the Bureau of Vital Statistics, the number of certified copies of certificates and verifications for age, parentage, etc., has increased many fold within the last two or three years, and continues to multiply. The increase is brought about by the greater need for records in connection with securing Social Security benefits, obtaining work permits, and the requirement of proving citizenship to obtain employment in certain occupations.

At present a birth checking project is being carried on. All births occurring in December 1939, January, February and March 1940 will be matched with the census enumerators' list to determine how complete birth registration is in North Carolina and with the idea of securing registration of all births that occurred during this period and were not registered at the time. It is planned also to use the knowledge gained from this check to improve registration in areas where all births are not now being registered.

Division of Sanitary Engineering

Through every channel possible the Division of Sanitary Engineering has attempted to take advantage of the opportunity to improve health conditions in North Carolina by means of funds available from the Federal Government. Through the PWA and the WPA much work has been done on the construction and improvement of water and sewerage system, on school sanitation, Malaria Control, and Community Sanitation.

With reference to Malaria Control Drainage for the past year, the Malaria Control Drainage Program has been conducted in eighteen counties on a total of 50 projects with the aid of the N. C. Work Projects Administration. With hand work 117.5 miles of new ditches were completed and 60 miles of ditches recleaned, and with machine work 62.3 miles of new canals were constructed. A new policy has been adopted requiring complete engineering plans and profiles on each proposed project. This requirement has reduced the number of malaria control projects, but at the same time has greatly improved the

quality of the work, permitting more efficient supervision. The total amount of money spent on this Program for the year was \$559,363 of which, it is gratifying to note, the sponsors furnished 33.2 per cent, while the cost of technical supervision was only 2 per cent. Since the beginning of the Malaria Control Program in December 1933, 2,473.5 miles of ditches have been completed by hand and 354.3 miles of major canals constructed. It is estimated that whole or partial protection from the malaria vector has been given to over one-half million persons. This was accomplished at a total cost, from the beginning of the Program to January 1, 1940, of \$4,309,191, or a little over \$8.50 per person protected.

During the year on the Community Sanitation Program 27,808 privies were built, everyone of which was furnished with a concrete slab and riser. The total cost of this Program for the year was \$871,166 of which the WPA furnished only slightly more than half of the cost. The Program is now working in 46 counties, all under the state-wide project.

For the year, 1,241 inspections of retail bedding establishments and 3,048 inspections of manufacturing plants were made. Although 3,555 pieces of bedding were condemned, there were only 8 prosecutions.

There were 278 approvals of residential water and sewage facilities made for the Federal Housing Administration.

During the year there were 474 water inspections and 317 sewerage inspections on municipal systems. The major portion of these were made with the purpose of taking advantage of Federal funds for the extension of systems and the improvement of plants.

There were 3,462 inspections of cafes, and 520 hotel inspections. To improve shellfish sanitation 630 inspections were made. There were 3,322 inspections of meat markets, and 379 inspections of fairgrounds. This is the most serious attempt to sanitize fairgrounds made in the state.

The personnel of this Division supervised and assisted in making 2,109 inspections of dairies and pasteurization plants. The number of commercial pasteurizing plants increased to 97. There are now 181 cities and towns in North Carolina operating under the Public Health Service Milk Ordinance; 38 have milk ratings of 90 per cent or more, a larger number than any other state, Texas being next with 22. Thus North Carolina, which has only about 8 per cent of the Public Health Service Milk Ordinance towns in the United States, has about 25 per cent of the "honor roll" towns.

On the PWA program, which is just being completed, a tabulation of water works projects, including those combined with sewerage, numbered a total of 90 projects for North Carolina, at an estimated total cost of \$9,915,321. Only five other states in the Union obtained more PWA water and sewer projects than North Carolina. These states were Texas, Ohio, Illinois, Georgia, and Utah. Of these only Texas, Ohio, and Illinois made a greater financial investment in water works improvements than North Carolina. On the basis of state wealth, North Carolina's investment in water works improvements was exceeded by only nine other states, and on the basis of number of projects in proportion to urban population, North Carolina ranked first in the Union among the states having as large or larger urban population than North Carolina. As of November 1938 the PWA had allocated over \$12,400,000 for water and sewerage projects, a considerable proportion of this improvement program was under construction during the past year. Complete new

water and sewerage systems were completed at such towns as Colerain, Fair Bluff, Halifax, Kenly, Oakboro, Pembroke, Pikeville, Princeton, Rich Square, Rockwell, Rose Hill, Rural Hall Sanitary District, Stoneville, Winterville and Winton. In addition to the construction work under the PWA, three towns in the above list were provided with complete water and sewerage systems as WPA projects.

Other water and sewer systems are under construction, and there has been a strong movement, sponsored by this Division, to provide water and sewerage facilities to 100 per cent of the population of cities and towns with existing systems. As of April 1, 1940, there were 112 honor roll towns which have taken definite steps to have 100 per cent of their residences connected to or made accessible to public water and sewer lines. Also as of April 1, 1940, there were 70 towns and sanitary districts which had taken definite action to retain an engineer and submit a WPA project for complete new water and sewerage systems. Six of these are already under construction.

Although a gratifying number of inspections have been made, it should be recognized that many of the inspectors spent considerable time assisting in the promotion of water and sewerage projects and extensions.

Unfortunately, the staff of this Division has been reduced through leave of absence to attend the Public Health School, through sickness, and by resignation to enter other or more lucrative employment. By reason of reduced appropriation, it has not been possible to find satisfactory personnel to make replacements at the salaries available. Besides salary increases, several additional personnel are urgently needed to keep the work of the Division abreast with the ever-growing demands. Much urgently needed work has of necessity been neglected by reason of inadequate appropriation and personnel, particularly in the field of milk sanitation, water works, sewerage, and school sanitation.

**SUMMARY OF PWA NON-FEDERAL PROJECTS IN THE STATE OF
NORTH CAROLINA BY TYPE OBTAINED FROM PUBLICATION
ENTITLED "PWA WATER WORKS NON-FEDERAL
PROJECTS" OF FEDERAL WORKS AGENCY**

As of November 9, 1938

TYPE OF PROJECT	Number of Projects		Estimated Cost	
	Sub-Totals	Totals	Sub-Totals	Totals
Water Mains.....	1		\$ 21,030	
Reservoirs.....	2		186,920	
Complete Water Works.....	38		4,022,927	
Total for Water Systems....	41		\$ 4,230,877	
Combined Sewer and Water	36		3,997,750	
Total Water, and Sewer and Water.....		77		\$ 8,228,627
Sewage Disposal Plants.....	13		\$ 3,199,472	
Sanitary Sewers.....	7		1,004,330	
*Total Sewer Systems.....	20	20	\$ 4,203,802	4,203,802
GRAND TOTAL FOR WATER AND SEWERAGE.....		97		\$ 12,432,429

* One storm sewer project of \$130,000 is omitted.

As of April 11, 1939

Total of Water, and Sewer and Water Projects for North Carolina as of April 11, 1939 was 90 for a total cost of \$9,915,321.†

† This includes at least the one storm sewer project of \$130,000.

Division of Oral Hygiene

The Division of Oral Hygiene of the North Carolina State Board of Health is directing its activities to the field of prevention by conducting an educational program in the schools of the state.

The four essential factors in arriving at and carrying on the present plan and set-up for the teaching of Mouth Health in the state are as follows:

1. North Carolina has a dentist, recommended by the North Carolina Dental Society and appointed by the Governor, as a member of the State Board of Health.

2. North Carolina is the only state having a law requiring that a dentist be a member of each County Board of Health, provided a dentist lives within the confines of the county.

3. North Carolina is one of the few states that have, in their Boards of Health, Divisions of Oral Hygiene on an equality with other divisions and directed by licensed dentists who devote their full time to the work.

4. The Division of Oral Hygiene of the North Carolina State Board of Health has, in addition to the Director, a staff of thirty licensed dentists and an educational consultant.

The dentists on the staff go into the schools and teach Mouth Health didactically and through demonstration. The didactic teaching is graded and fitted to the different grades and groups. In the lower grades the story method is used and the stories are illustrated with stereopticon views, blackboard drawings, posters, models, etc. In the Home Economics departments, foods and food values in their relation to tooth and bone building are stressed, and, in the Science departments, the dentists take up tooth histology.

After the didactic teaching has been done the mouths of the children in each grade are inspected. The children are classified as to their ability to pay by their grade teacher. The dental office is then set up, especial care being taken to make the appearance of the office and the dentist contribute to the constructive educational value of the activity, and the demonstrative part of the teaching is begun. In this teaching the necessary dental corrections are made for the underprivileged children without any cost to them.

The dentists' teaching in the classrooms is supplemented by follow-up educational material. This material consists of mimeographed sheets for each of the elementary grades. Stories, pictures, and factual material are used to teach the value of clean, healthy mouths. On each of the sheets there is something for the children to do, such as pictures to be colored in the lower grades and completion tests for the upper grades.

Another phase of the educational program is a dental news service for grammar grade and high school papers. Mimeographed sheets, containing a story illustrating some phase of caring for the teeth, are sent to schools publishing mimeographed papers in whatever quantities are desired. These sheets go out twice monthly during the school year. The present circulation is approximately 45,000.

A method of visual education which has been very popular and successful in teaching Mouth Health is the puppet show which the Good Teeth Council for Children and the Carolina Playmakers help us in presenting. This play is shown to more than 150,000 children every school year.

An outstanding feature of the program is the course in Public Health Dentistry in the Division of Public Health of the University of North Carolina, which the white dentists on the staff attend every summer.

The financing of the Division of Oral Hygiene is from the State Board of Health, the Children's Bureau of the Federal Government, and appropriations by counties, cities, Women's Clubs, Parent-Teacher organizations, individuals, etc. This latter money is secured through the presentation to these organizations of the needs and benefits of the work by the Director of the Division. There was a time, not far removed, when it was difficult to get appropriating bodies to see that what they termed an expenditure was not an expenditure but an "investment in child health" which would pay tremendous dividends and reflect itself, not only in the reduction of the number of children who were repeating their grades, but also in the behavior of the children. Now the story is different. Everyone seems to realize that it is no longer an experiment but a great opportunity in the reclamation and conservation of "Child Health."

The arrangement for Mouth Health Programs in the counties of the state is that the county pays one-half of the expense and the State Board of Health pays the other half. The length of time spent in the counties depends both upon the needs and the amount of the appropriations by the counties, together with the allocation to the State Board of Health for this activity.

Mouth Health Programs were conducted in seventy counties and in four city units during the school year 1938-1939. A total of 174,035 children were taught, in their own classrooms, by the dentists on the staff. This means that on each school day an average of 870 children received instruction in Mouth Health from a dentist, who is not only an authority on the subject of Mouth Health but has been trained to present it in the schools.

The necessary dental corrections were made for \$0.073 underprivileged children. Thousands of referred children found their way to the offices of private practitioners according to verbal reports from dentists in private practice.

Division of Industrial Hygiene

As previously reported, the Division of Industrial Hygiene has been concerned mainly with the control and prevention of occupational diseases that result from the inhalation of siliceous dusts. And, although such activities will continue for some time to be the major concern of the Division, the siliceous dust diseases have yielded ground during the past twelve months to other occupational disabilities, the variety of which forecasts an expanding scope of interest.

In line with past activities there have been examined approximately 1,550 persons, most of whom were preemployment cases; however, 289 of them were routine workers in asbestos textile plants who were reexamined after an interval of three years. There were 145 impinger and 29 konimeter samples of dust collected for particle counts to evaluate atmospheric concentrations and 10 Owen's Jet samples obtained for particle size measurements to determine the extent to which the dusts were respirable. In addition, chemical analyses were made of two samples of tobacco stemmery dust for organic matter content and five samples of foundry dust for iron content. Examined petrographically for quartz, or free silica, were eight samples of brick plant dust.

three of granite, one of tobacco stemmery, and three of foundry dusts. This medical and engineering work involved brick and tile plants, pyrophyllite mines and mills, granite quarries and cutting sheds, a cigarette factory; foundries; asbestos textile plants; feldspar mines and mills; mica recovery, fabricating, and grinding plants; limestone quarries; other mining operations; a washboard plant; stock feed manufacturing; peanut harvesting; mirror manufacturing; and a cotton mill chemical dust hazard.

There were 23 industrial establishments visited to discuss and promote the installation of dust control devices; 14 to obtain an occupational analysis and information on the character of the working environment; and 1, upon request, to advise with respect to a possible dermatoses hazard. This work resulted in the preparation, upon request, of diagrams and specifications for exhaust ventilation systems for three plants, the design of a small dust collector house, and a request from the officials of a foundry to be conducted on a tour of inspection to similar plants in the state that had installed dust control equipment. During the year there was installed in a large granite cutting shed an exhaust ventilation system for a part of the surfacing machines, and in a foundry exhaust ventilation was provided for the casting cleaning machinery. These systems were checked by measurements of air flow and dust counts; both were found to be performing satisfactorily.

Detailed medical reports were prepared for the Industrial Commission with respect to compensation hearings for six men, all of whom claimed silicosis as the cause of disability, the mineral dusts involved being granite, foundry, pyrophyllite, copper ore, and feldspar. There were four men examined specifically in connection with compensation hearings. One of the litigants died shortly after the hearing, and an autopsy performed by the Director of the Division confirmed the ante mortem diagnosis of silico-tuberculosis. Medical testimony was given at two such hearings involving three litigants; both medical and engineering testimony at one; and only engineering at one.

A very noteworthy development of the past year has been the coöperation with local and district health officers in the evaluation of industrial environments. The coöperative enterprises involved dust exposures attending peanut harvesting in Washington County, feed grinding and compounding in Nash, carbon tetrachloride exposures in a cotton mill in Alamance, and a very puzzling neuro-circulatory syndrome affecting 60 furniture plant workers in Lenoir County. A satisfactory answer to the latter has not been obtained as yet, although the matter has the continued attention of the Division personnel. It is hoped that such joint investigations will increase in number. The Division has a highly specialized service to render and can operate at maximum effectiveness only with the assistance of the men who are out on the firing line, so to speak. The Division welcomes requests from local health officers for joint investigations of local industrial problems.

Information was provided upon request to physicians and others with respect to lye poisoning, lead intoxications, and cyanide poisoning. In coöperation with the United States Public Health Service a survey was made of two plug tobacco plants to determine the incidence of industrial skin diseases among the workers. There was obtained little or no evidence that would incriminate plug tobacco ingredients as dermatoses producers.

There were 21 public addresses, lectures, and papers presented during the past year by Division personnel. Three papers were presented before inter-

national associations. A paper, "The Foundry Dust Hazard and Its Control," was presented at the annual meeting of the American Public Health Association in Pittsburgh; a paper, "Pyrophyllite Dust: Its Effect and Controls," was read at the annual meeting of the American Institute of Mining and Metallurgical Engineers in New York City; and another paper, "The Health of Brick and Tile Plant Workers in North Carolina," was presented at the convention of the American Ceramic Society at Toronto, Canada. Two formal papers were presented at the 10th Annual State-wide Safety Conference and another at the meeting of the Piedmont Safety Council at Gastonia. There were six radio talks: an address to a civic club at Hemp; and eight miscellaneous talks and lectures to students at the University and Wake Forest College, nurses, and other groups.

The titles of bulletins issued by the Division during the year are:

"Respirators Approved for Protection Against the Inhalation of Mineral Dusts: Their Use and Maintenance."

"Suggestions for the Prevention of Heat Cramps."

"Information Memorandum for the Furniture Industry Relative to Respirators for Protection against the Inhalation of Certain Atmospheric Contaminants."

"Safety Check List for Paint Spray Booths and Enclosures."

Articles by Division personnel appearing in national publications were "Card Room Fever," *Textile World*, March 1940, and "Preemployment Examinations and Related Activities of the North Carolina Division of Industrial Hygiene," *Journal of Industrial Medicine*, April 1940.

An innovation during the year was the design, in coöperation with the Industrial Commission, of a portable exhibit on safety and occupation diseases. This exhibit was set up at five county fairs and at the State Fair.

A survey was made of the furniture industry for information relative to the occupational exposures. There were 96 plants visited involving approximately 13,000 workers.

The Division has played host during the year to many distinguished public health workers. The City of Detroit sent its Director for a three weeks visit; the State of Arkansas its industrial engineer for ten days; the City of Los Angeles its industrial physician for a week; the Bureau of Health of the Phillipines its Director of the Division of Industrial Hygiene for three weeks; the Territorial Bureau of Health of Hawaii its industrial hygienist for a month; the State of Vermont its industrial physician for a week; the State of Oklahoma one of its sanitary engineers for a week; and Utah its State Health Commissioner for a week. These gentlemen were all conducted on tours of state industry and shown the routine functions of the Division.

Dr. H. F. Easom, the Director of the Division since its organization in 1935, resigned to return to work at the North Carolina Sanatorium. He was replaced by Dr. T. F. Vestal, a native of Randolph County, this state, who was a clinic physician at the Worcester County (Massachusetts) Tuberculosis Sanatorium at the time he accepted appointment to the directorship of the Division. Dr. R. L. Robinson, examining physician of the Division, resigned to go into private practice at Lithonia, Georgia.

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